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<b>(54) Title:</b> METHOD AND SYSTEM FOR CONDUCTING ELECTRONIC COMMERCE TRANSACTIONS  <b>(57) Abstract</b>  A system and method for conducting electronic payment transactions accepts and stores information describing an item sold by a merchant on a commerce server. The merchant also defines payment processing rules that define the payment methods accepted by the merchant. The merchant, in turn, is provided with a reference identifying the commerce server and the item. The merchant preferably publishes this reference at the merchant's web site on a web page offering the item for sale. A customer viewing the merchant's web site indicates a desire to purchase the item by selecting the reference. As a result, the customer is put in contact with the commerce server and is provided with information from the commerce server about the item and is given a list of payment options. The customer preferably selects a payment option and provides the commerce server with payment information, such as a credit card number. In response, the commerce server contacts a selected payment system and completes the electronic commerce transaction. The commerce server then notifies the customer and the merchant of the results of the electronic commerce transaction and delivers the item to the customer.		

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## METHOD AND SYSTEM FOR CONDUCTING ELECTRONIC COMMERCE TRANSACTIONS

### CROSS-REFERENCE TO RELATED APPLICATION

5        This application is a continuation-in-part of U.S. Provisional Application No.  
60/054,121, filed July 29, 1997.

### BACKGROUND

#### FIELD OF THE INVENTION

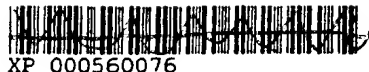
10        This invention pertains in general to electronic commerce and in particular to a method  
and system for conducting electronic payment transactions via the Internet.

#### BACKGROUND OF THE INVENTION

15        Electronic commerce conducted over the Internet has become increasingly important  
over the last decade. Online merchants offer goods and services for sale or rent including  
physical objects such as compact disks, books, and clothing, and intellectual property such as  
streaming music and movies and electronic books. Physical items may be delivered to the  
customer via the mail or a variety of other shipping options. Intellectual property, in contrast,  
may be delivered to the customer by allowing a download via the file transfer protocol  
("FTP"), providing the customer with an access key, establishing a telnet session, or through  
20        some other form of electronic delivery.

Typically, these goods and services are displayed on the merchant's web site and a  
prospective customer views, selects, and purchases the goods using web browsing software  
such as NETSCAPE NAVIGATOR®. The customer usually pays for a product by establishing  
a secure connection with the merchant's web server and transmitting payment information,  
25        such as a credit card number, to the merchant. The merchant then uses back-end processing to  
verify the payment information and receive payment. For example, the merchant may use a  
secure telephone line or network link to contact the credit card issuer before accepting the  
customer's order. Eventually, the merchant and credit card issuer settle payment and the  
merchant delivers the product or service to the customer.

30        A difficulty with the above-described scenario is that each merchant must implement an  
inventory and payment database and a payment acceptance and verification system. For  
example, the merchant must establish and maintain a database tracking sales, delivery, and  
payment information and product inventories in order to support the electronic commerce  
system. There is significant cost and complexity in maintaining this database, including the  
35        difficulty of integrating it with legacy accounting and fulfillment systems and aggravated by



The United Parcel Service has activated the first nationwide mobile data service using cellular technology, permitting the company to transmit delivery information from its 50,000 delivery vehicles for immediate customer access.

UPS created the system by forming the first alliance of fifty public cellular carriers throughout the country to provide a common data service, all connecting with UPS's own private global telecommunications network, UPSnet. The system, which was implemented at a cost of about \$150 million, is the largest of its kind in the world. UPS selected cellular over the other network alternatives because it provided the most extensive geographic coverage, highest reliability, and potential for future upgrades.

The cellular alliance features McCaw Cellular Communications, Contel Cellular, GTE Mobilnet (formerly known as GTE Mobile Communications), PacTel Cellular, and Southwestern Bell Mobile Systems, all competitors in the cellular indus-

try. These firms enlisted fifty additional carriers to help UPS extend its immediate tracking network across the United States.

### Comprehensive Tracking

The mobile data service is the foundation for the company's comprehensive tracking system—UPS TotalTrack, which provides immediate delivery information on bar coded air and ground packages. This information was not previously available until the day after delivery.

UPS is the only parcel delivery company able to digitally capture both package information and the customer's signature through a custom-built hand held computer called the DIAD (Delivery Information Acquisition Device). Access to the cellular system is activated when the UPS driver inserts the DIAD into the vehicle's unique transmitter (DIAD Vehicle Adapter). From there, the tracking information is uploaded through the cellular system and UPSnet to the UPS Data Center in New Jersey. The in-vehicle equipment and logistical support came from Motorola, Inc., with installation by UPS's automotive mechanics.

This cellular network provides the connection between UPS vehicles and the UPSnet. These systems are created to be fail-safe with cellular redundancies, dual access to UPSnet, and multiple connections to the data system.

The cellular-based wireless data service provides immediate access to delivery information for more than 1 million UPS daily pickup customers. It also provides more extensive geographic coverage than any mobile communication alternative.

The UPS mobile data system includes several technical innovations designed to adapt the voice-oriented cellular systems for data transmission. Error-correction communication protocols are used to ensure error-free message delivery. And cellular carriers' switching systems are directly connected to UPSnet to reduce the duration and cost of data calls. The carriers also developed a billing system consolidating all carrier charges into a single UPS bill and

pp. 30-31-2

## On The Fast Track with TotalTrack: UPS Deploys Mobile Data Service



«Henry Towle»

*Henry Towle is a freelance writer who lives and works in New York City.*

established a unified carrier help desk that resolves service problems quickly.

With the cellular communications technology, UPS TotalTrack can provide detailed information on such things as pickup date, scheduled date of delivery, status of package, same day verification of delivery, and the name of the person who received the package. It is available by calling a toll-free Tracking Hot Line (1-800-457-4022) which is staffed twenty-four hours a day, seven days a week.

### New Levels of Service

In addition to providing customers with immediate tracking information, UPS is able to provide customers with MaxiShip, a PC-based automated shipping system designed for customers with high package volume and the need for fast package processing. Using UPS-provided software, the system automatically rates and zones packages, prepares packages requiring special services, such as C.O.D. and Delivery Confirmation, and creates user-defined management reports.

UPS has also created a new level of service that provides guaranteed three-day delivery and immediate package tracking. Called UPS 3 Day Select, it is the first service of its kind to be offered in the small package distribution industry. UPS 3 Day Select was developed primarily for longer-distance shippers who need time-definite delivery and higher levels of information. The service is available to any shipper for interstate delivery throughout the 48 contiguous states and is priced between the company's traditional ground and air express services. UPS 3 Day Select can be used when a long distance shipment must be delivered faster than regular UPS ground service. Customers are provided with special bar-coded labels, each with a unique number that is scanned into the tracking system at key points during transit. For immediate updates on a shipment's status, customers can call the Tracking Hot Line and provide UPS with the tracking number.

The cellular system developed by UPS is considered the most comprehensive wireless data transmission architecture

available today. It covers more area and is more reliable than any other type of mobile communication.

Technology has also provided UPS key platforms for expanding its customer services globally. In 1988 UPS moved into the overseas market with its global electronic data communications network, LPSnet, to serve as the information processing pipeline for international package processing and delivery. LPSnet now has more than 500,000 miles of lines and links more than 1,300 UPS distribution sites in forty-six countries. UPS is leasing excess lines through a UPS owned company, UPS Telecommunications.

In 1991 UPS's International Ship-

### Cellular Industry Facts at a Glance

**First System.** On October 13th, 1983, the first cellular system began operating in Chicago.

**Subscribers.** 10 million, as of November 23, 1992.

**Growth.** Currently adding 222,000 new cellular users every month, or roughly 7,600 every day. Over the last seven years the industry exploded from 203,600 subscribers to 10 million.

**Revenue.** Approximately \$7.2 billion a year.

ment Processing System (ISPS) received the COMPUTERWORLD/Smithsonian award for innovation in information technology.

### Smart Scanning

Since 1989, ISPS has acquired a universal accounting system and an enhanced tracking system that can follow the movement of a package in transit. Every international package now undergoes "smart scanning" which takes tracking to the next step by determining through bar code technology not only where the package is supposed to be, but where it actually is. The system also provides for re-routing of packages and notifies interim and final UPS destinations if a package is early, late, or routed to the wrong destination.

UPS has long been interested in Electronic Data Interchange (EDI), the com-

puter-to-computer exchange of information. The company has the most extensive EDI interaction with foreign customs clearance houses in the world, with standard-based systems in place or being developed in more than twenty countries. EDI is allowing UPS to streamline procedures, eliminate paper, and conserve time and money. UPS is now able to electronically disseminate clearance and delivery information from the customer's computer, to the destination customs agency, to the consignee. To support these technology systems the UPS maintains two data centers, in Mahwah and Paramus, New Jersey.

UPS is not only a global delivery network, but a telecommunications company with its own fiber-optic network and its own communications satellite. Because of its recent interest in using high technology to deliver packages, it is easy to forget that the company was founded in 1907 in Seattle. Now headquartered in Atlanta, UPS has more than 273,000 employees, delivers 11.5 million parcels and documents per day, owns 116,000 vehicles and 197 jet aircraft. Its service area includes more than 185 countries and territories, has a daily customer base of 1.2 million shippers, and last year earned \$16.5 billion in revenues.

UPS has 3,000 employees involved just in technology, owns six mainframe computers, 250 minicomputers, and 41,500 PCs companywide. It also has 600 LANs and 18,000 connected workstations, 100 packet switching nodes worldwide, and 465,000 miles of dedicated cable circuitry.

UPS's creation of TotalTrack is seen both as a major advance in development of the cellular industry and encouragement for the industry itself to undertake other advances in data services.

The United Parcel Service is in the package distribution business and also the information business reporting on its package business. The ads that UPS is running on behalf of TotalTrack state that "now there's just one thing that travels faster than a UPS package. And that's news of it." A happy, and competitive, state of affairs.

XP-002245026

*PC Foods, Inc.*

P.D. 01-04-1999	2
P. 1-2	

Customer Service Agreement

You, the Customer, and PC Foods mutually agree to be bound by the following terms and conditions:

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PC Foods agrees to receive your order, purchase only items listed, and deliver them to your designated place of delivery within two hours of the time you list on your order as the preferred delivery time. This two hour window is the delivery time frame.

All orders received by midnight (cst) will be delivered the next day within the delivery time frame unless an alternate delivery date is specifically requested. Requests for same day delivery will be accommodated in most circumstances for an additional fee.

The Customer agrees to be liable for the cost of groceries and service fees for the items requested and further agrees to make full payment at the time of delivery. This payment includes the grocery total and applicable service fees. PC Foods will accept cash, credit card (Visa, Master Card, American Express), money orders, or personal checks. A returned check fee of \$25.00 will be assessed for all returned checks, regardless of reason. In the instance PC Foods receives two returned checks, a cash-only basis will be invoked.

The Customer agrees to be available and accept the grocery purchase during the delivery time frame. A non-deliverability charge of \$10.00 will apply if at the expiration of 20 minutes past the delivery time frame you or your designate are not available to accept the purchase and render full payment. A second delivery will be attempted during the same day at a reasonable time determined by PC Foods. PC Foods is not liable for the freshness or quality of the order past the delivery time frame. Due to the perishable nature of the items being delivered, when the Customer is not available to receive the groceries on the second delivery attempt, the Customer agrees to still be liable for all costs and service fees.

If the Customer fails to pay at the time of delivery or if the customer is not available to receive the delivery, the Customer



agrees to bear and pay collection fees and legal fees reasonably necessary to collect the original principal amount due to PC Foods.

If PC Foods cannot for any reason meet our obligation for your individual order, all reasonable efforts will be made to notify you prior to delivery and you may elect to cancel the order without any assessed service fees.

In addition to the above stated contract between PC Foods and you the customer governing the terms and conditions of receiving merchandise, the following conditions apply to the use of the Ordering System. The PC Foods grocery ordering system is the sole property of PC Foods, Inc. You may use this proprietary system only after completing a registration form. All logos, slogans, operational characteristics, posted articles, and code - including publically available HTML, Text, JavaScript, bit maps, and the "look & feel" are copyright of PC Foods, Inc. and Walker Consulting. You may not publish, reproduce, reverse engineer, copy, or create derivative works of the PC Foods Ordering System.

By clicking on the "I Agree" button the customer agrees to be liable for any use of the PC Foods ordering system by or through that customers assigned account number. You the customer also agree to indemnify PC Foods for any such use. PC Foods may alter any terms of this agreement in its sole discretion by giving the customer reasonable notice. The customer will be deemed to have accepted such changes through continued use of the PC Foods ordering system. The customer may terminate this agreement by giving PC Foods reasonable notice and agrees to be liable for any charges incurred. Finally, the customers agrees to provide truthful and accurate information on the registration agreement. Failure to do so will lead to the termination of your account and possible legal action for violation of these agreement terms.

**HAVING READ AND UNDERSTOOD IN FULL THE FOREGOING REGISTRATION & CUSTOMER SERVICE AGREEMENT, CONTINUE WITH THE REGISTRATION PROCESS BY CLICKING ON Start Registration IN THE LEFT FRAME. YOU WILL BE ASK TO SIGNIFY YOUR AGREEMENT WITH THESE TERMS BY SELECTING / AGREE AFTER FILLING OUT THE REGISTRATION FORM.**

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92C009

# Information Technology of Commercial Vehicles in the Japanese Parcel Service Business

Hiroo Kawata  
Yamato System Development Co. Ltd.

P. 371 - 382.  
(12)

## I. ABSTRACT

Japan's economy started to slow down in 1991, during this period overall transportation demands were down. These difficult times affected the Door to Door Parcel Service (DTD), however, we see this business expanding.

Following the lead of the U.S., Japan's DTD started 15 years ago. Of the 40 companies which started in the DTD industry only a few survived. Amongst these companies, Yamato Transport Co., Ltd (YTC), Japanese Post Office, and Nippon Express Co., Ltd, emerged as the industry leaders and today, command a virtual monopoly. According to the 1991 statistics of the Japanese Ministry of Transport, these three companies handled 78% from the total 1.5 billion parcel volume. YTC, the Japanese pioneer and leader, delivered 0.5 billion parcels in 1991.

Japan has 39,000 truck companies and their fleet consist of ordinary trucks offered by the manufactures.

I would like to explain the history of our custom made DTD-Takkyubin truck and its information technology.

"Kuroneko Yamato Takkyubin" is the name of our consumer friendly DTD service, offering next day delivery, flat rate, and equal service to anybody, anywhere. YTC uses box containers (Unit Load System) and Logistic Management to standardize all internal work. Our catch phrase is "Call Yamato for a pickup today, to deliver tomorrow" and our employee motto is "Service first and bottom-up-management". Following our mottos we developed the Takkyubin truck. Every year, improvements, especially in mobility and delivery functions, are added to our "Infomobil". Integrated radio and YTC network, combined with customized functionality, all part of the Takkyubin truck.

Today, Japanese trucks are made specifically to transport goods. No truck manufacturer offers a modern truck with advanced integrated communication technology, i.e. an office on wheels. This is where YTC stepped in and implemented a technologically advanced truck, which allowed us to lead the industry.

## II. DTD PARCEL DELIVERY

In 1977, YTC pioneered Japanese DTD. By 1991, the total industry, including Post Office services, delivered about 1.53 billion parcels annually.

Parcels Delivered / Annual Increase

COMPANY NAME (TRADE NAME)	1988 (MILLION)	PLUS (%)	1989 (MILLION)	PLUS (%)	1990 (MILLION)	PLUS (%)	1991 (MILLION)	PLUS (%)
YAMATO TRANSPORT (TAKKYUBIN)	352.70	20.1	411.26	16.6	448.30	9.0	478.77	6.8
NIPPON EXPRESS (PERICAN-BIN)	262.95	29.9	289.91	10.3	309.29	6.7	316.09	2.2
POST OFFICE (YU-PACK)	240.00	22.6	298.00	24.2	351.43	17.9	408.12	16.1
FOOTWORK (FOOTWORK-BIN)	84.63	15.8	94.77	12.0	105.97	11.8	106.74	0.7
OTHER	210.97	19.9	228.30	8.2	233.43	2.2	223.24	-4.4
TOTAL	1,151.25	22.4	1,322.24	14.9	1,448.22	9.5	1,532.96	5.9

Figure 1

YTC, Nippon Express Co., Ltd, and the Post Office hold a market share of 74%. The parcel volume increases annually and the three companies have a virtual DTD-monopoly.

Annual Parcel Delivery

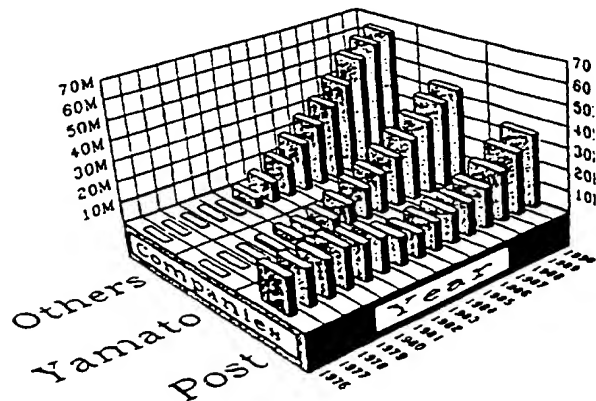


Figure 2

In the United States where the business started 10 years earlier than in Japan, companies such as United Parcel Service (UPS), DHL, and Federal Express carry more than three billion parcels annually. They expanded their business world-wide and share now more than 60% of Japan's international parcel volume. YTC started a joint venture with UPS, DHL founded DHL Japan with support from Japan Airline and Lufthansa, and Federal Express bought a Japanese transport company.

U.S. DTD - Parcels are picked up by truck and delivered to the local hub close to the airport. A hub is basically a truck terminal with a high speed sorting machine. Parcels which are to be delivered over long distances, are flown to Super Hubs via company plane. UPS has its Super Hub in Louisville, KY, and Federal Express in Memphis, TN. The last parcels arrive around midnight. All the sorting is done in a few hours. The parcels are then flown to their destination hub, to be picked up by trucks and delivered early in the morning. This system is called Hub and Spokes.

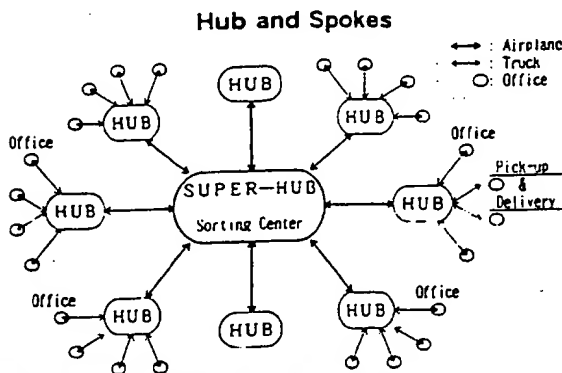


Figure 3

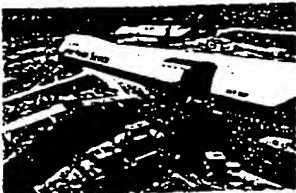


Figure 4



Figure 5

According to business reports from UPS and Federal Express, their air fleet consists of more than 300 large body planes. Both companies Super Hubs are in the central part of the U.S., and the time zones are used effectively. The dynamic super hub system has been very successfully implemented.

Japan's land area is 380,000 square kilometers (146,000 square miles), which equates to be 1/25 of the U.S.. Japan has four main islands and over 4,000 smaller islands. The boomerang shaped archipelago stretches 2,800 kilometers from north to the south-west. The majority of the population lives in the densely populated metropolitan areas of Tokyo and Osaka, barely 500 kilometers (312 miles) apart. Between these two cities the parcel volume is extremely high. On the

other hand, the parcel volume for the sparse populated poles of the country is very low.

Due to Japan's unique geographic and demographic features, the American Hub and Spoke system with its heavy reliance on cargo planes cannot be implemented and thus a considerably different DTD derived.

In 1991, according to Japan's Distribution Statistics, the total weight of parcels delivered domestic transportation was 6.3 billion tons. Trucks share is 5.7 billion tons or 90%. Multiplying the weights by the delivery distances, trucks account more than 50% weight-distance. Maritime and air transportation accounts for almost all other parcel cargo movement, air cargo accounts for less than 1%.

Japan has 5,000 kilometers (3,125 miles) expressways, covering the country. Tunnels and bridges for rails and expressways connect Honshu with Hokkaido, Shikoku, and Kyushu. The excellent road and track infrastructure is capable of handling large volumes of cargo. YTC's transportation system takes advantage of this by utilizing 11 - 15 ton trucks to ensure fast parcel delivery. The most striking difference between the U.S. counterparts, is the virtual aversion of planes. YTC has a hub in every large city, a total of 64. Most hubs have 63 truck routes to other hubs. One circum-route provides additional support. In Japan, this system is called *rosenbin*. The actual *rosenbin* truck routes exceed 2,200.

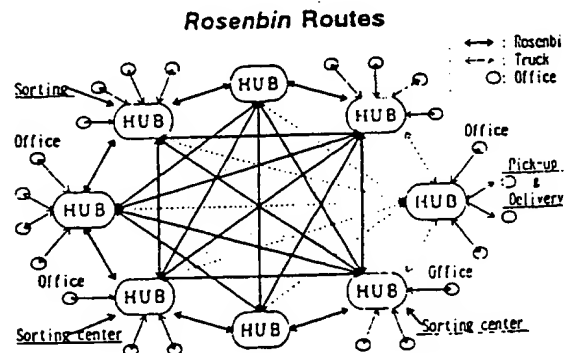


Figure 6

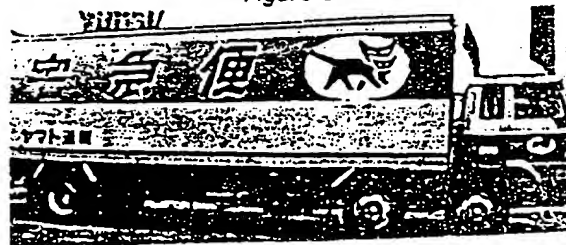


Figure 7

Around midnight *rosenbin* trucks leave for their destination hubs where they arrive in the early morning. To increase efficiency the truck routes are supported with airplanes, trains and piggybacks. Sorting is done in a few hours and morning delivery starts. Each sized hub supports 20 to 25 pickup and delivery

centers (YTC-Offices). From these centers, YTC delivers and picks up customer parcels. In addition, each center supports about 160 agencies for customer parcel drop offs. A total of over 260,000 agencies are spread throughout Japan. Parcels are picked up, or for a lower rate can be dropped off at any agency. Each YTC-Office has its own fleet of Takkyubin trucks for pickup and delivery. Takkyubin, our trade name for door to door service, delivers over 500 million parcels per year. Standard Takkyubin means next day delivery. To distinguish YTC from other companies, Takkyubin provides special services. "Cool Takkyubin" offers three different temperatures, 0°C, -5°C, and -18°C, for food transport. "Golf Takkyubin" is door to golf course service (pre-alerts golf course), "Time Takkyubin" provides timed delivery and same day service, and "UPS Takkyubin" is used for international service. These special services fetch premium fees, their share reached 10%. This new generation of Takkyubins became an instant success.

After more than 20 years of phenomenal growth, home to home deliveries are flattening. Business-Use, company to company or company to person delivery, is the latest market leader. Japan's short distances between cities allow truck service for next day deliveries. Most business correspondence use this service, taking advantage of parcel tracking. Growth is strong and today it accounts for more than 50% of the Takkyubin deliveries.

The first ten years of YTC's expansion were hampered by red tape. No specific DTD regulations were enacted, and YTC had to apply in every city for an array of permits. The DTD industry grew ever larger and finally in 1989, the Japanese Government acted. The Ministry of Transport decided to revise their regulations, for the first time in 45 years. After a long struggle, YTC was finally able to benefit from more business friendly regulations.

The U.S. showed us the potential for a new kind of parcel delivery business by providing next day delivery, flat rate, and equal service for everybody, anywhere. After implementing a system tailored to Japan's specific needs, we repeated the U.S. success story. Today the size of Japan's DTD industry is only surpassed by the U.S..

### III. TAKKYUBIN CUSTOM TRUCK

YTC started as a regular truck freight company. Takkyubin deliveries were only a minor part of the business and regular trucks were used for parcel delivery. In 1979 one incident changed everything. A picture showing a brown UPS delivery truck, triggered the takkyubin truck revolution. YTC realized that a customized delivery truck would open the door for service performance unknown in Japan.

At that time, UPS had a research facility designing customized delivery trucks, followed by successful production. Their study included handling, effective-

ness, safety and "human design". Inspired by their concept, the manager of YTC Fukuoka Vehicle Service Center, built a prototype using old scrap car parts and presented it to Yamato's truck manufactures. Our concept was "Effectiveness and Safety." Toyota Motor Corporation approached YTC and offered to build five prototypes of a Takkyubin truck. In 1981, the first Takkyubin truck was delivered. The cost was high, about 60,000,000 yen (480,000 U.S. dollars). Toyota realizing the potential of a new market, named it "Walk Trough Truck" and added it to its product line. The truck allowed the driver to walk in upright position from the cabin to the cargo area. The first trucks had many critics. A raw and sometimes annoying truck design, combined with inexperienced drivers led to a bumpy start. However YTC's and Toyota's team spirit faced the challenge and eliminated problem by problem over the years. Annual Takkyubin truck production is now around 1,000. Out of 12,100 trucks YTC purchased, 9,450 are currently in use all over Japan.

The "Walk Through Truck" combines the driver's cabin with the cargo area into one room. The truck is supplied with a high tech, low emission diesel engine, to meet tough emission control regulations. Cargo capacity is two tons and it seats two people. The truck allows one to walk in the upright position from the cabin to the cargo area, and rear and side cargo door can be conveniently opened from inside or outside. In accordance with the concept "Effectiveness and Safety", Toyota and YTC add or improve 20 features every year. Japanese automobile and transportation regulation are very strict and severely hamper the freedom on how to build the truck. Every truck must pass a very stringent annual inspection. The inspections add to the difficulty to modify existing trucks. Naturally people from Toyota and YTC have been struggling with automobile and transportation agencies since the very beginning. Fascinated by the American UPS truck, relying on pictures, YTC has improved the vehicle. Due to the burden of more restrictive regulation, the Takkyubin truck is no match to its UPS counterpart. Nevertheless, the dream to make a perfect truck which pleases the driver, runs without polluting the environment, and still meets all government regulation, is still alive.

YTC also explores the use of environmentally sound fuels. Prototypes of battery and methanol powered cars are being developed with other companies.

YTC's 21,200 vehicles include 3,000 *rosenbir* trucks and from the 17,000 delivery vehicles of which 9,450 are Takkyubin trucks. YTC takes an active role using their know-how and experience, to help manufactures of trucks to build better vehicles.

20 years ago, when I visited UPS in New York, the director persuaded me of the distinction of the UPS trucks and I was profoundly impressed about the excellence.

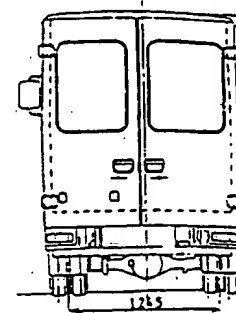
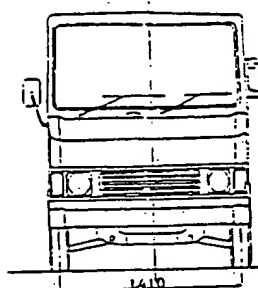
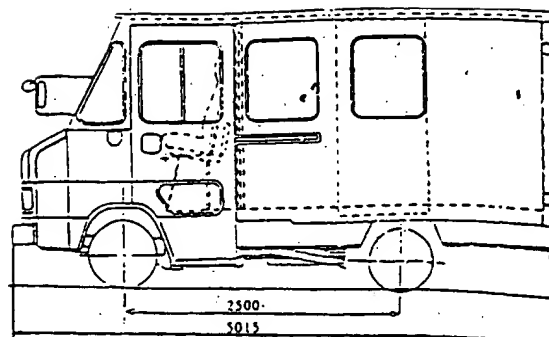
# Takkyubin Truck

Figure 8

(Walk Through Truck) manufactured by Toyota.

## SPECIFICATIONS 1991 MODEL (TOYOTA MOTOR CORPORATION)

DIMENSIONS (M)	LENGTH 5.02 WIDTH 1.79 HEIGHT 2.9
CLEARANCE	0.85 M
CARGO AREA (M)	LENGTH 2.80 WIDTH 1.60 HEIGHT 1.74
CAPACITY WT	2 TONS
CAPACITY VOL	7.79 CUB. M
ENGINE	2.977 CCM
WHEELBASE	2.50 M
TURNING RADIUS	4.60 M
TIRES	FRONT 195-14-6 REAR 185-14-8



#### IV. DTD INFORMATION SYSTEM

"Kuroneko Yamato Takkyubin" is the name of our door to door delivery service. It operates from 8 a.m. to 8 p.m., 365 days of the year. The popular saying "Call Yamato for a pickup today, to deliver tomorrow", is used all over Japan to request Takkyubin service. We provide next day delivery to 99% of Japan. This service is controlled by a state of the art computer network.

Every driver has a handheld computer (POS). Several phases of the parcel delivery are entered into the POS: the pickup, the arrival at the originating hub, the completion of sorting at the destination hub and the final delivery. This allows YTC to locate any parcel.

Information is entered by the driver with his portable POS and is transmitted by a telecommunication network. Passing through the YTC sales offices's WS (work station) to the hub's mini computers, the data feeds into the mainframe computers in Tokyo and Osaka.

The database in the mainframes are updated every 15 minutes. Parcel tracking for customer service is possible from 8 a.m. to 10 p.m. YTC calls this "Parcel Inquiry Service." The parcel's ID number, which is supplied on the invoice as an bar code, allows instant parcel tracking.

Parcel Inquiry Screen

1992/07/16 14:43:04		TAKKYUBIN TRACKING SCREEN							
		Off. Arriv.		Cont. NO.		Flight		Employee Header	
Tracking-No		Status	Date	Code	Code	Time	Box-No	-No	-No
900-1268-9981		Pick-up	07/17	45-10	30-09	10:00		089498	526894
		Load Cont.	07/17	45-00		2222080		044147	
		Load Truck	07/17	45-00		22:52 2222080	453001	044147	
		Arr. Hub	07/17	30-00		05:25 2222080		002622	
Max 20 Status									
P00			07/18	30-19				044285	321381
Time P00			08/18	30-19		09:46		044285	321381

Figure 9

Any of YTC's truck drivers or 1,600 offices offer the customer instant parcel tracking. Customer service is at its best.

Yamato System Development (YSD), to which I belong, is YTC Group's pivot computer company which handles all YTC Group's communication networks and information systems. YSD has Fujitsu and IBM main frame computers. These powerful computers are located in Tokyo and Osaka and are the backbone for database management and information communication networks. In case of an emergency, Tokyo and Osaka centers mutually maintain real-time backups, 24 hours,

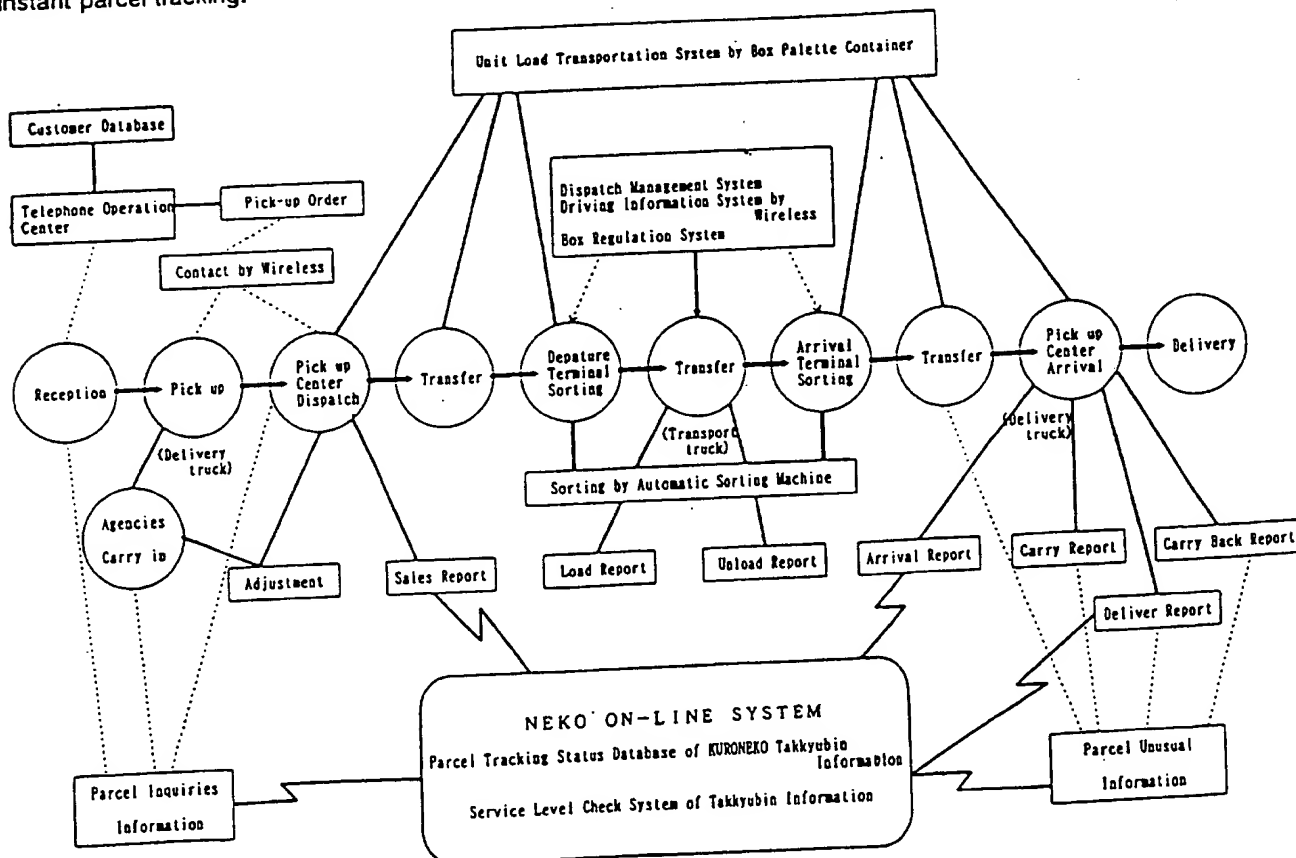


Figure 10

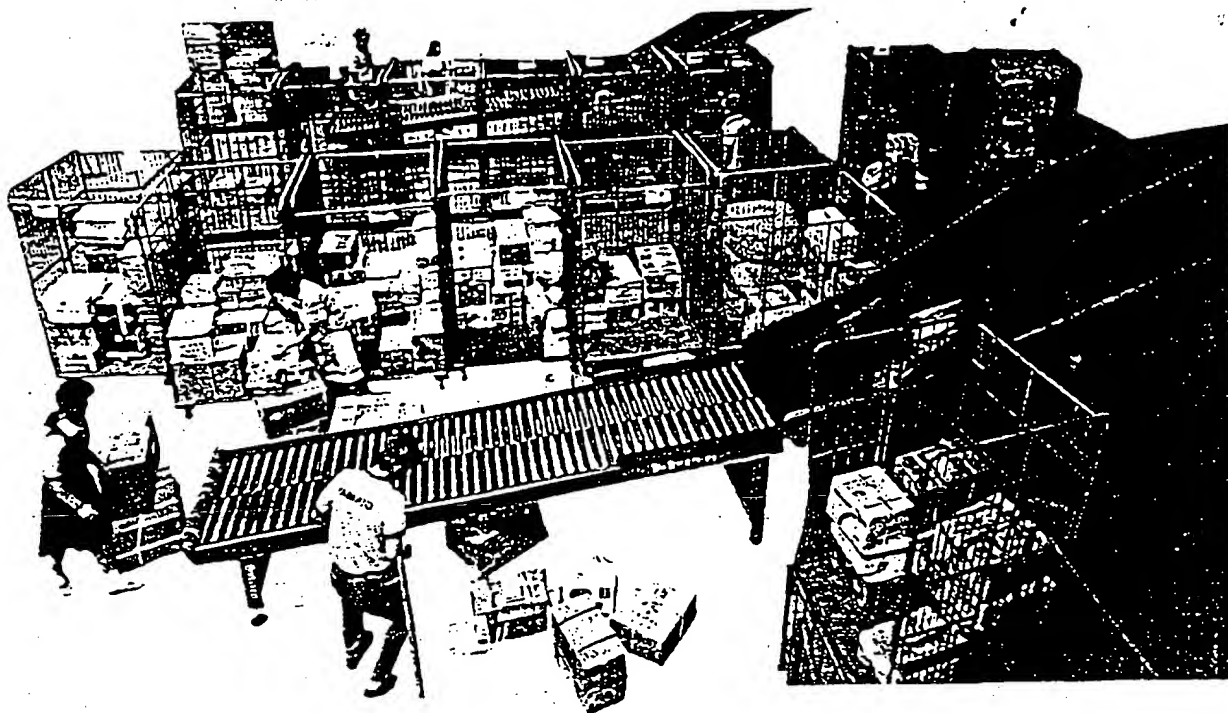


Figure 11

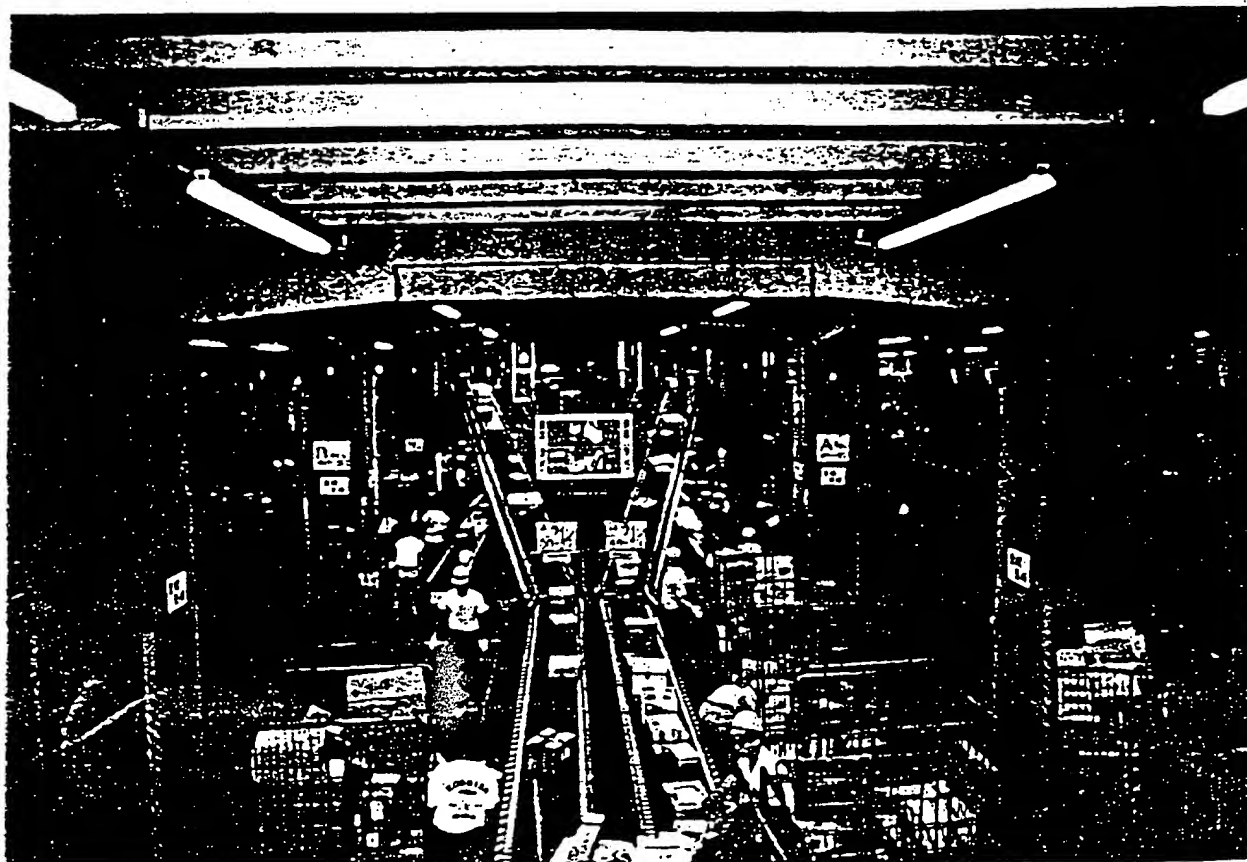


Figure 12  
376

365 days per year. Main networks have relay points all over Japan, using double NTT (Nippon Telegraph and Telephone) and NCC (New Common Carrier) high-speed digital circuits. Each line has at least one backup line. Every relay point, is connected with over 1,600 centers, total communication line length is more than 242,000 kilometers (151,000 miles).

In 1982 YSD's Value Added Network (VAN) service was the first to be certified by the Ministry of International Trade and Industry for public use. Today the system supports YTC and over 180 customers with over 13,000 terminals. In 1990, YSD installed a International Leased Line (High-speed digital circuit) from Tokyo to Los Angeles to start overseas network services.

Recently, Matsushita (Panasonic) asked YSD to operate Electronic Data Interchange (EDI), so the trend is from VAN to EDI.

Today, Yamato System Development is 19 years old has a capital of 1.8 billion yen, and 1,100 employees. YSD also provides services outside of YTC. In 1991 65% of all sales income, which was 18.8 billion yen, was generated from outside customers.

Profits were a sound 1.1 billion yen. We have over 700 system engineers in our development department. YSD has its own delivery business. Our eight distribution centers (warehouses), approved by The Ministry of Transport, have total area of 23.1 square kilometers (9.0 square miles). Approximately 30 trucks support the Distribution Operation Centers.

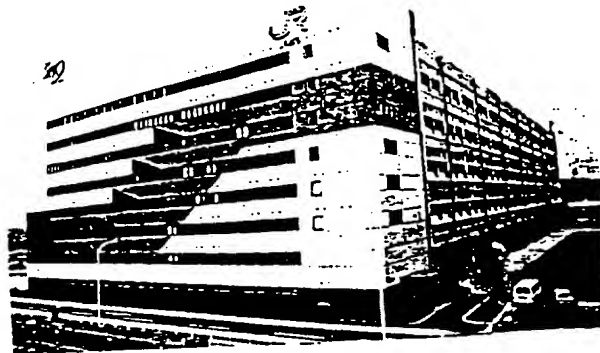


Figure 14

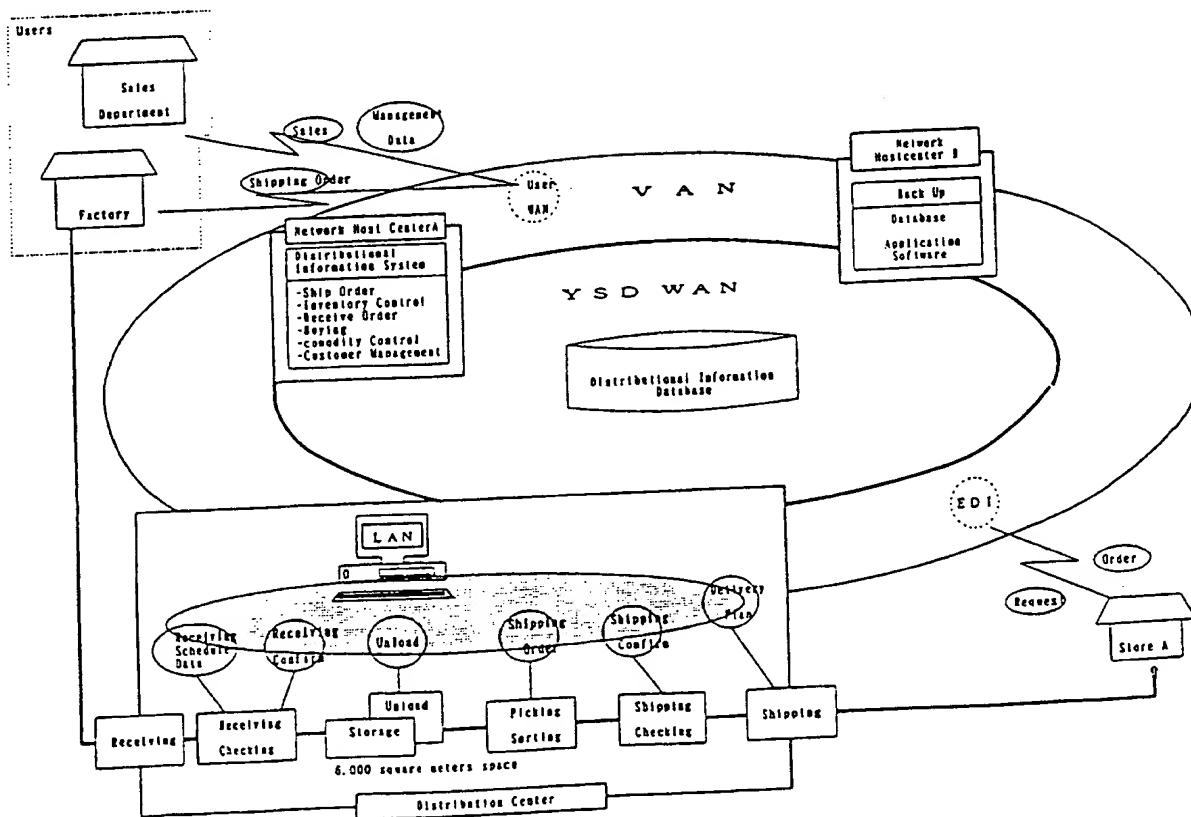


Figure 13



## YSD SYSTEMS

### 1. Transportation Information Systems

- 1 MCA Delivery Support Systems
  - Pickup Control System - Dispatch Management
  - Delivery Control System - Under Development
  - Driver Control System
- 2 Hub Control Systems
  - Automated Sorting System
  - Unit Load System
- 3 Digital Driving Pattern Monitors
  - Report Generator
  - Speed, Idle, Rpm, Weight tracking
  - Fleet Management System

### 2. Delivery Monitoring Systems

- 1 Delivery Status Monitoring System
- 2 Delivery Volume Monitoring System

### 3. Customer Information Systems

- 1 Pre-Print Invoice System (Volume Customer)
- 2 Customer Information System
- 3 YSD Customized Systems by Business Types
  - Database Package for Home Business
  - Database Package for Mail Order Business
  - Charges Collect Support System

### 4. Special Takkyubin Systems

- 1 Cool Takkyubin Support System
- 2 Book Takkyubin Support System
- 3 Food Takkyubin Support System
- 4 Time Takkyubin Support System
- 5 Leisure Takkyubin Support System  
(Ski, Golf, Luggage)

### 5. Application Software

- 1 Accounting Packages
- 2 Personal Resources Management Systems
- 3 Business Management Systems

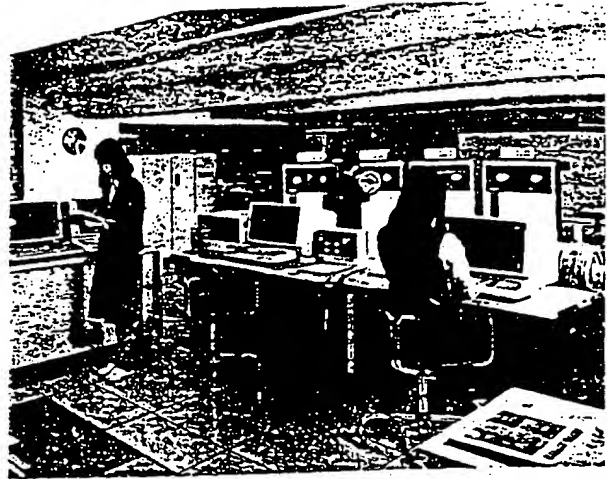


Figure 16

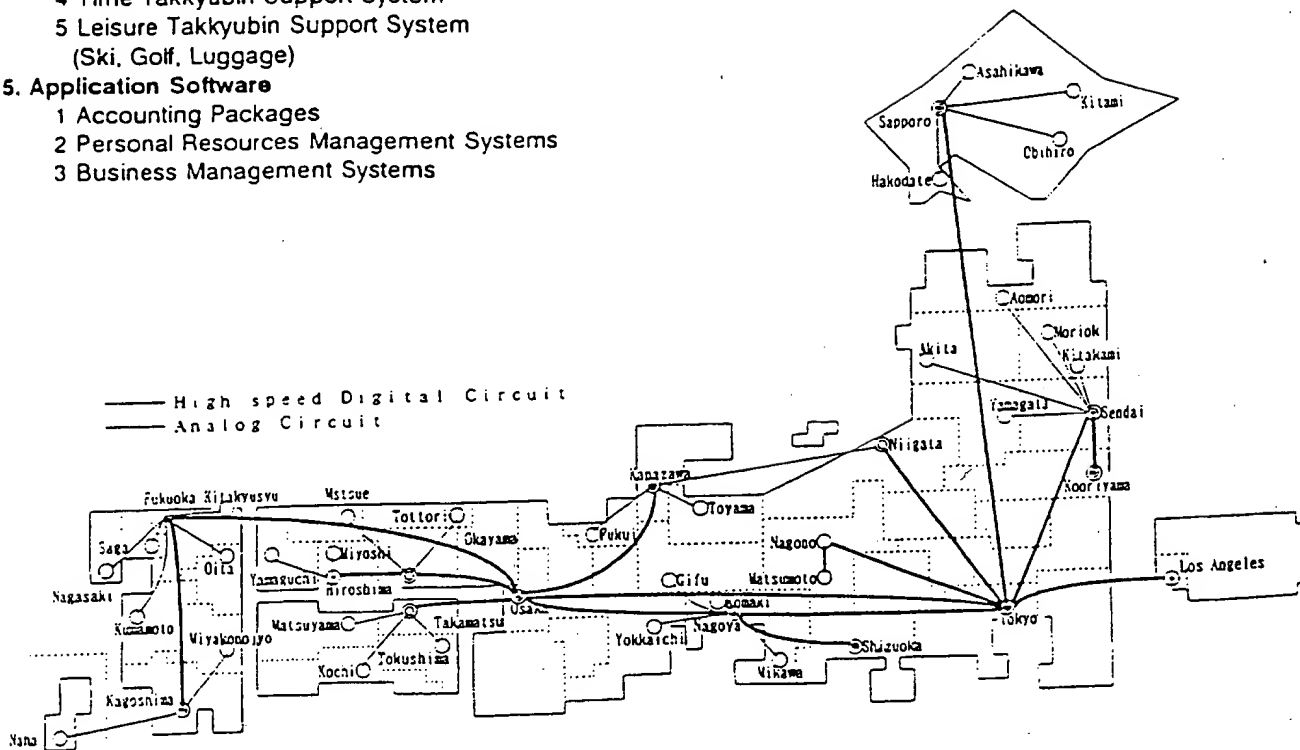


Figure 15

## V. TRUCK INFORMATION SYSTEMS

Below are some examples of YTC's Information technology in relation with Takkyubin trucks.

### 1. PICKUP WITH MCA

Multi Channel Access (MCA) is a two way communication radio system.

Yamato has 260,000 agencies throughout Japan. Parcels can be dropped off at any YTC office or agency. Takkyubin trucks provide scheduled pickups for their agencies. Parcel drop offs are discounted at 100 yen per parcel. In urban areas YTC must provide superior pickup response for larger parcel volume in order to compete with other delivery services. Takkyubin pickup requests by telephone are immediately transferred to the truck nearest the customer. Yamato doesn't want customers to wait. "No wait pickup" is the basic goal to beat the competition and this can only be achieved with the help of computer information systems.

Before we had integrated network support the basic pickup procedure was as described below. A customer called and the operator had to write the name, address, parcel quantity, time, etc. on a memorandum. After receiving several pickup orders the operator sorted them, and called the trucks closest to pickup area. This system worked fine, but with growing parcel volume problems occurred. The followings were the major problems we encountered:

- (1) Errors happened because extensive customer information had to be written down for each new delivery.
- (2) Between the busiest hours of 4 to 6 p.m. operators had to put customer on hold. MCA communications were also overloaded, so many operators couldn't get in touch with the truck drivers which caused delays in pickups.
- (3) YTC safety regulations required drivers to pull over to write down the operators information. Very inefficient.

To solve these three problems Yamato had developed a computer system to perform the following:

- (1) Customers telephone number and addresses are stored in databases. When a customer calls, the telephone number has to be entered, and customer information is displayed on the screen of the work station. The operator now enters only pickup time and the number of parcels, reducing the time of telephone conversation with the customer dramatically.
- (2) The system uses the truck database to find the truck closest to the pickup location and MCA transmits the information to the truck.
- (3) Each truck is equipped with an on board

computer and can receive the pickup orders. The up-to-date information can be viewed on a Liquid Display Screen (LCD) screen or printed out.

- (4) After pickup the driver enters the confirmation which is transmitted the YTC, allowing customer parcel tracking and Automatic Vehicle Monitoring (AVM).
- (5) NTT's yellow pages on disks, make it easy to maintain updated customer databases eliminating entry errors.

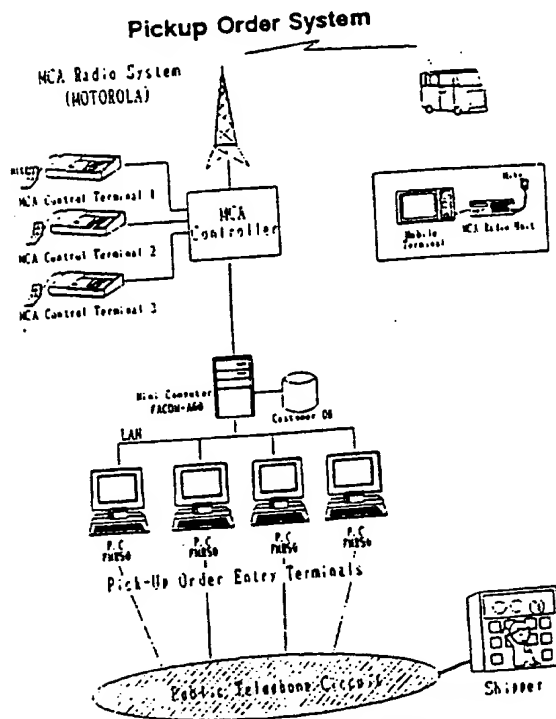


Figure 17

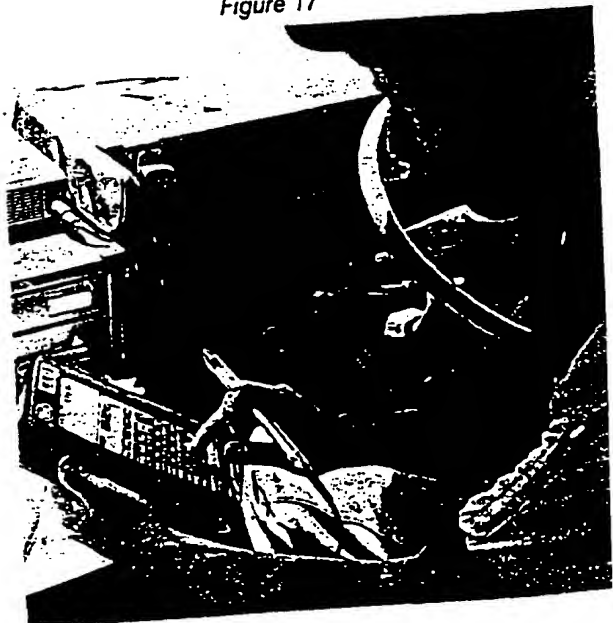


Figure 18

## MCA SYSTEM SPECIFICATIONS

### BASE STATION

- (1) Motorola (800MHz) MCA SYSTEM
- (2) Fujitsu minicomputer
- (3) Fujitsu FMR personal computers
- (4) Telephone operator Work stations (WS) 16 max.
- (5) UNIX operating system and LAN
- (6) One Fujitsu minicomputer connects with three Motorola MCA.

### SYSTEM CAPACITY

- (1) 1,000 Takkyubin trucks
- (2) 20,000 customers (Upgrade to 200,000)
- (3) 10,000 pickups a day
- (4) Advanced pickup scheduling, 10 per customer, 1,000 a day, up to 3 months advanced notice
- (5) 10,000 district names to simplify address entry (Upgrade to 200,000)
- (6) Reports: Operator performance, MCA usage etc.

YTC added the MCA radio communication system and the customer databases to improve pickup service. The system combined with our drivers mission to serve the customer best, gives YTC a leading edge over the competition.

Base stations are in every major city and business areas. Each base station is surrounded by order stations (telephone operation centers). These stations support over 9,000 Takkyubin trucks.

## 2. ROSENBIN CONTROL SYSTEM

Parcels are collected by Takkyubin trucks and transported to the local hub. From there YTC's

*rosenbin* trucks transport the parcels to the destination hub. The *Rosenbin Control System* supports the process.

Every hub has a schedule board similar to the departure and arrival boards in airports. This board informs drivers and other employees to facilitate the work.

The number of hubs has steadily increased, reaching 64, in August 1992. *Rosenbin* trucks have about 2,000 scheduled routes per day (See figure 3). During the holiday season additional support routes are added, totaling over 6,000 a day.

YTC's supervisor used to write standard schedules for every route. Changes in parcel volume and truck driver availability forced the rewriting of the schedule. The schedules were then handed to the truck drivers.

Today the supervisor obtains his schedules from PC. He only enters the driver's name and truck number. The truck driver enters the number of containers and additional cargo information. All data is transferred to update the databases and the *Rosenbin Control System's* mainframe.

The above pre-alert information is used by the destination hub to prepare for arriving truck shipments.

Every truck sends a constant identification signal which is received by electronic check points along the roads. The truck location is then transmitted to the system. In addition the system allows voice communication between trucks and hubs.

The purpose of this system

- (1) Advise truck driver of traffic jams, accidents and give alternate routes
- (2) Provide anticipated delivery time for customer
- (3) Give pre-alert information to destination hub

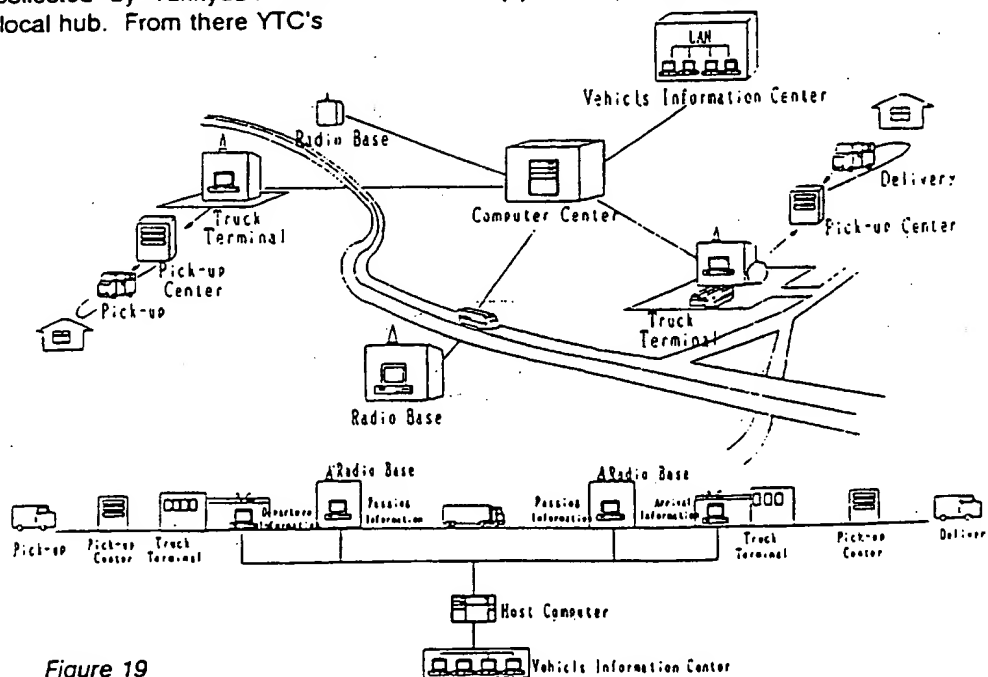
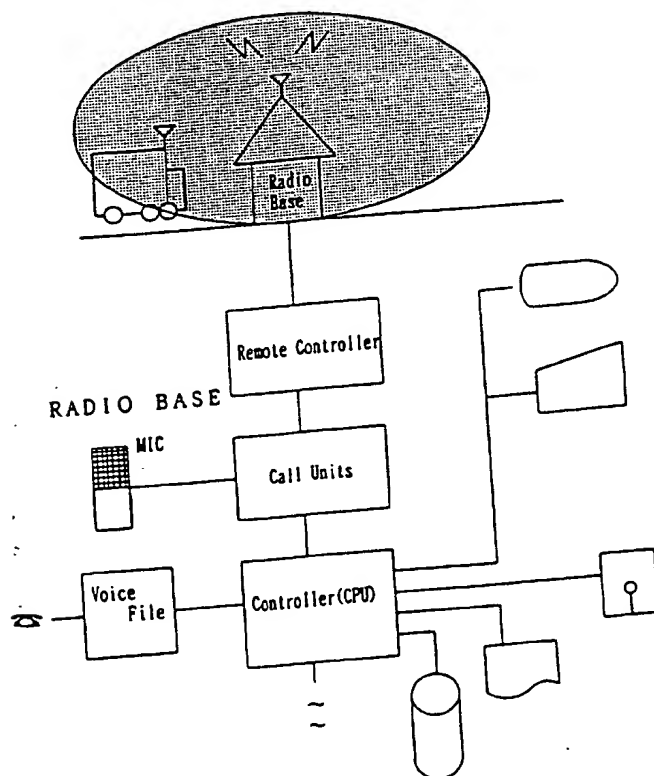


Figure 19

- (1) Destination and arrival time
- (2) AVM (Automatic Vehicle Monitoring, Truck's location)
- (3) Traffic jams, accidents etc.
- (4) *Rosenbin* truck schedule status (delays, problems)
- (5) Latest road and weather reports

YTC has planes to use the satellite network in the future. The system will be able give the exact truck position anytime, anywhere. We plan to implement a new system to use GPS (Global Positioning System) which is managed by the Pentagon.



- (1) Frequency Band 400 MHz
- (2) Communication Method
  - Dual frequency
  - Semi-duplex operation
- (3) Transmission Power
  - Base 10W
  - Truck 10W
- (4) 1,000 trucks capacity
- (5) Transmission activation
  - Consecutive for base
  - On demand for truck
- (6) Baud rate is 1,200 bps
- (7) Modulator Method
  - MSK 1,200 Hz  $\pm$  100
  - Space Frequency band 1,800  $\pm$  100

Following police and transportation department's guidelines, YTC has been using analog monitors to record truck driving speed. Recently they have been replaced with a new generation of digital monitors. This units with speedometer, odometer, and weight sensor input, to track speed, distance, cargo weight. This coaches the driver to operate the vehicle according to YTC guidelines and improves fleet management information.

The analog monitors were not connected with the rest of the information system. The new digital technology allowed integration of the two systems.

- (1) All recorded data is feed into the network
- (2) Improved accuracy for driving patterns
- (3) Assists driver

To be able to start the truck, the driver must insert his own IC memory card into the digital unit. The recorded information transfers from IC memory to the POS every 0.5 seconds. This data is feed into the NEKO network. YTC benefits from improved safety, more efficient scheduling and the capability to analyze overall fleet performance.

- (1) Driver name, departure and arrival times
- (2) Fuel and oil consumption
- (3) Operation hours, distance travelled, rest time, speed, length of stops, etc.

381

## DIGITAL TACHOGRAPHY SAFETY MANAGEMENT

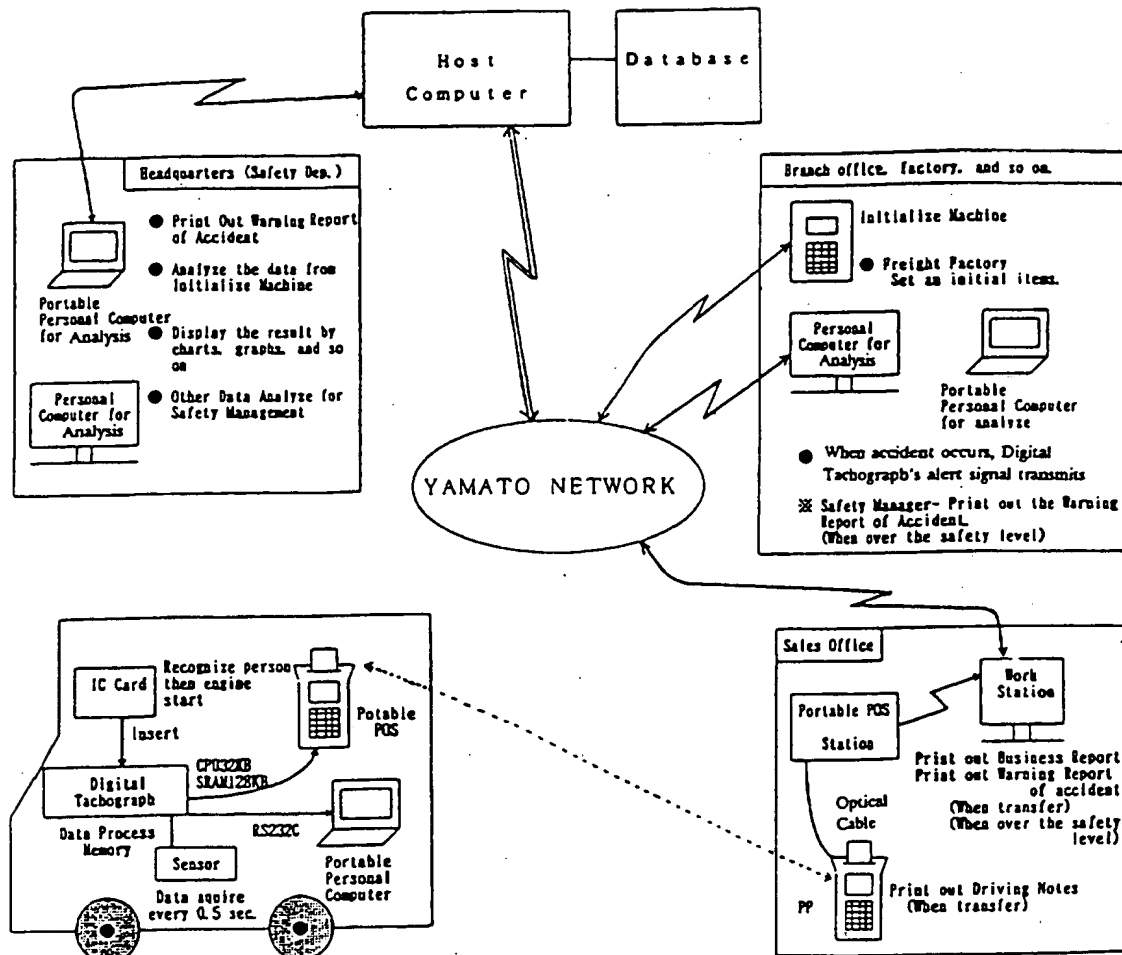


Figure 21

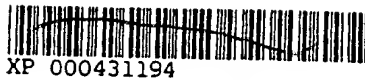
## VI. TAKKYUBIN TRUCKS FUTURE

Door to door parcel service is now a stable business monopolized by the big three. But there are many improvements needed. A serious problem is Japan's acute shortage of human resources. Our drivers can deliver an average of a 150 parcels per day. YTC has a hard time to hire enough drivers to keep up with the constantly increasing parcel volume. To ease the driver crunch we reduced their working hours, but we still have a shortage. For DTD the driver is the core and can not be replaced by any technology. Faced with these problems we try increase our productivity to perfection. Logistic management constantly tries to reduce empty cargo space, streamline pickups and reduce redeliveries to a minimum. Cost reduction, service improvement, and

speedier delivery are the driving forces. We have found the almighty strategy, superior information systems to support the drivers are needed.

Individual hardware and software is getting powerful. However, integration of all our systems including communication networks and database necessary to meet future demands, i.e. a Information. But we can not afford to forget about the important aspect, safety.

Japan's DTD service has come a long way since its start. With over 1.5 billion parcels delivered annually we are a strong and respected industry. To provide the best service to our customers, enabled success. We will strive to meet our customers' demands with total logistic management.



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## The Physical Distribution Information Network in the Home-Delivery Business

Takashi Sekita  
Director

Applications Improvement Dept.  
Yamato Transport Co., Ltd.

Recently, information network systems have made remarkable progress in the distribution business. It can be said that the POS system, which reflects the downstream era, is a typical case. Also, in the physical distribution business, information is captured at its source in the procurement, manufacturing, sales, and consumption stages, and progress is being made through improvements in thoroughgoing customer services, in quality control, in improvement of work efficiency, in development of new systems and in the development of new businesses. In any case, these things do not stop with at the improvement of the efficiency of an individual business, and, as seen in logistic physical distribution, they extend to total sales strategy by the consistent utilization of information. This shows the importance of networks. I hope I can help you to understand the relationship between physical distribution and information by introducing our company's "home-delivery-service information network system" in this article.

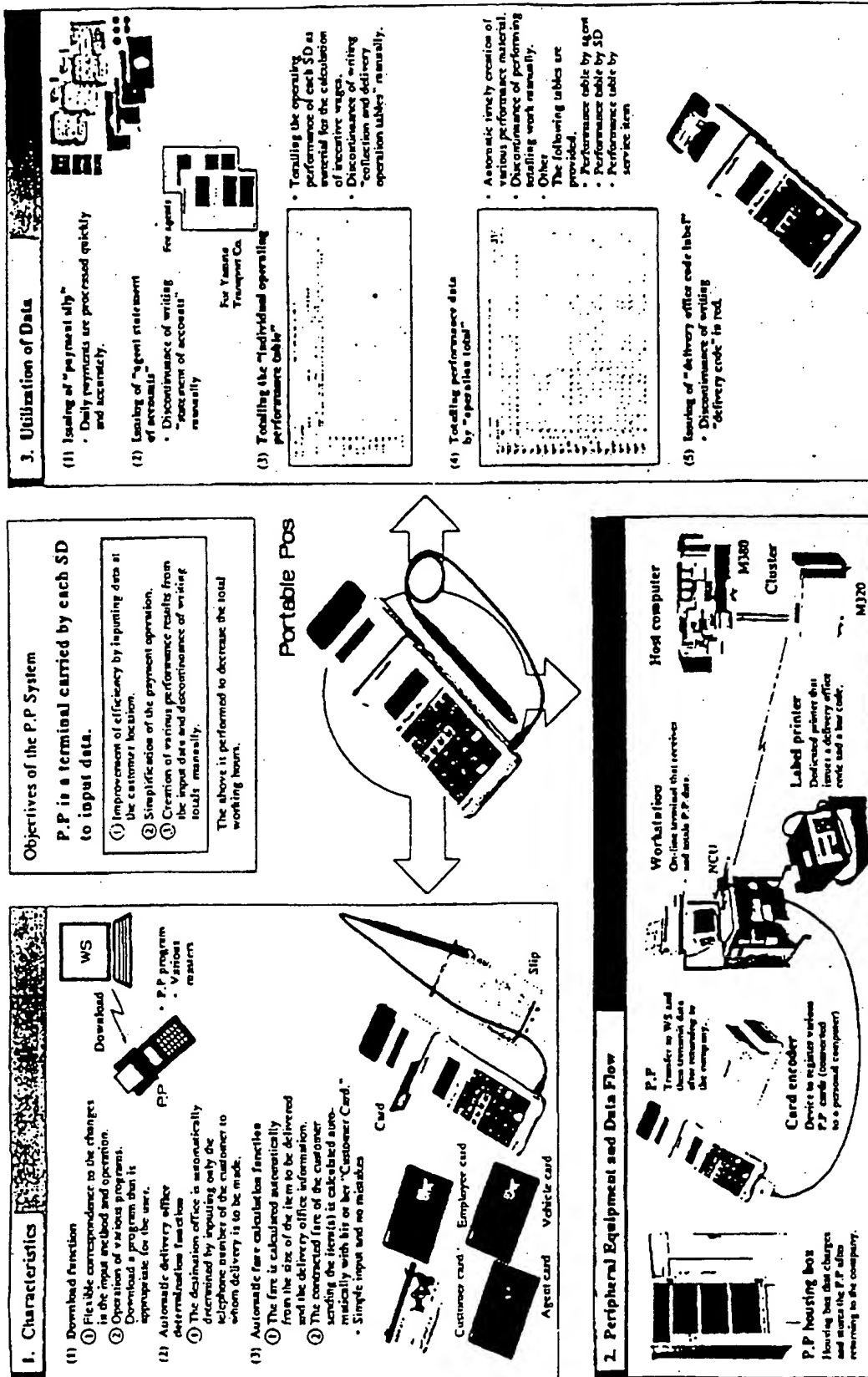
### 1. General Situation of the Home-Delivery Service

Yamato Transport Co. has 40,000 employees, 1,500 offices and 20,000 vehicles. It handles one million home-delivery items a day and 400 million items a year. Since the total number of items handled by the entire home-delivery business is 1 billion items, the market

share of Yamato Transport Co. is 40% and it is in an oligopolistic situation together with the second ranked Pelican (Nippon Express Co.), whose market share is 28%. The characteristic feature of the Yamato Transport Co. is its direct management system throughout Japan. It tries to make its network services uniform and to improve on its thoroughgoing efficiency and customer services through its 240,000 agents. The company is putting various new services in its "Home-Delivery Service Series" on the market one after another, such as golf-equipment home-delivery service, ski-equipment home-delivery service, cash-on-delivery home-delivery service, cool-items home-delivery service, and airport-baggage home-delivery service, in addition to the general-items home-delivery service. The service area covers 99.7% of the national land area and 99.9% of the population. The percentage of items to be delivered on the next day is 91% of the total items.

### 2. Positioning of the Information Network System

A selling point of this home-delivery service is its system. The system can be explained using the human body. Offices are developed (skeleton) along with the sales strategy (brain), loading and unloading (muscle) activities are performed on the basis of the offices, and the system of these muscles and



bones is controlled by information (nerves). The home-delivery service cannot be carried out without an information network system.

This information can be divided into "up" information and "down" information. The sources of the "up" information are the items to be delivered. The important thing is how quickly the item information (slip number, customer name, type of item, transport section, fare, etc.) can be obtained. This is the origin of the POS concept. On the other hand, the "down" information is feedback of the obtained information, and means the utilization of information in a way that contributes to customer services, quality control and improvement of efficiency. The "down" information does not exist without the "up" information and the "up" information does not exist on the assumption of the existence of the "down" information. The thing to connect the "up" and "down" information is the database. The information network is the general term for this.

### 3. "Up" Information (Collection of Package Information)

POS (Point Of Sales) in the transport field means the point of receiving packages. Package information taken at this point can contribute to quality control and customer services. Therefore, our company gives all the sales drivers (SDs) a portable terminal so that they can input data. Of course, the primary role of SDs is the collection and delivery of goods, but they contribute to the management of the company by reflecting the viewpoint of the customers in their area. This means management by all members. SDs are not merely doing blind work. They input data when packages are taken out for delivery, when the

delivery is completed (including the bringing back of goods), or when abnormal packages are found (misdelivery, unknown address, breakage, etc.). In such cases, SDs need do nothing but scan a slip number (bar code). All of the data is transmitted to the host computer in Tokyo.

### 4. Information Network (NEKO Net)

The following is the route of information transmission. The data collected by the above mentioned SDs is stored in their portable terminals. This portable terminal is called a PP (Portable POS) in our company. The terminal is connected (jacked in) to a WS (workstation) in the office when the SD goes out to make a delivery, or when he returns to the office after the collection of goods. Then the data is transmitted to a small computer (cluster) installed at a key base (usually one place in each prefecture) that manages the office, through a public line. The data is automatically transmitted from the cluster to the host computer in Tokyo through a leased line (optical cable); that is, all the data is stored in a database of the host computer. Then, it is processed according to its purposes, changed into "down" information (applicable information) and then distributed to the necessary locations (See Figure 1 & 2).

### 5. Database

The host computer that takes charge of the database is located in Kamiyama, Tokyo. It is controlled and operated by the Yamato Systems Development Co. This is a 100% invested subsidiary of the Yamato Transport Co., which was created through making the computer section of the Yamato Transport Co. independent in 1972. Since then, the



# 125th-term NEKO Network

Host	Cluster	Terminal	Line, etc.
M780 (1)	M340 (1) K 670 (4)	PP : 23, 711 units (PortablePOS)	— High-speed digital circuit (64K - 1.5Mbps)
M380 (1)	M730 (8) K280R (29)	WS : 2,059 units (workstation)	— Analog circuit
M760 (1)	(An asterisk * indicates the offices added during this term.)	Nekobit : 240 units	<input type="checkbox"/> DMIX (Multiplexer)

125th-term enhanced points

1. Installation of K670 (4 units):  
Northern Tokyo (2 units), Chiba and Atsugi (1 unit each)
2. New installation of K280R at four places:  
Asahikawa, Nagano, Himeji, and Kagoshima (1 unit each)  
(As for equipment, the K280Rs of the offices that installed the  
above K670s are transferred.)

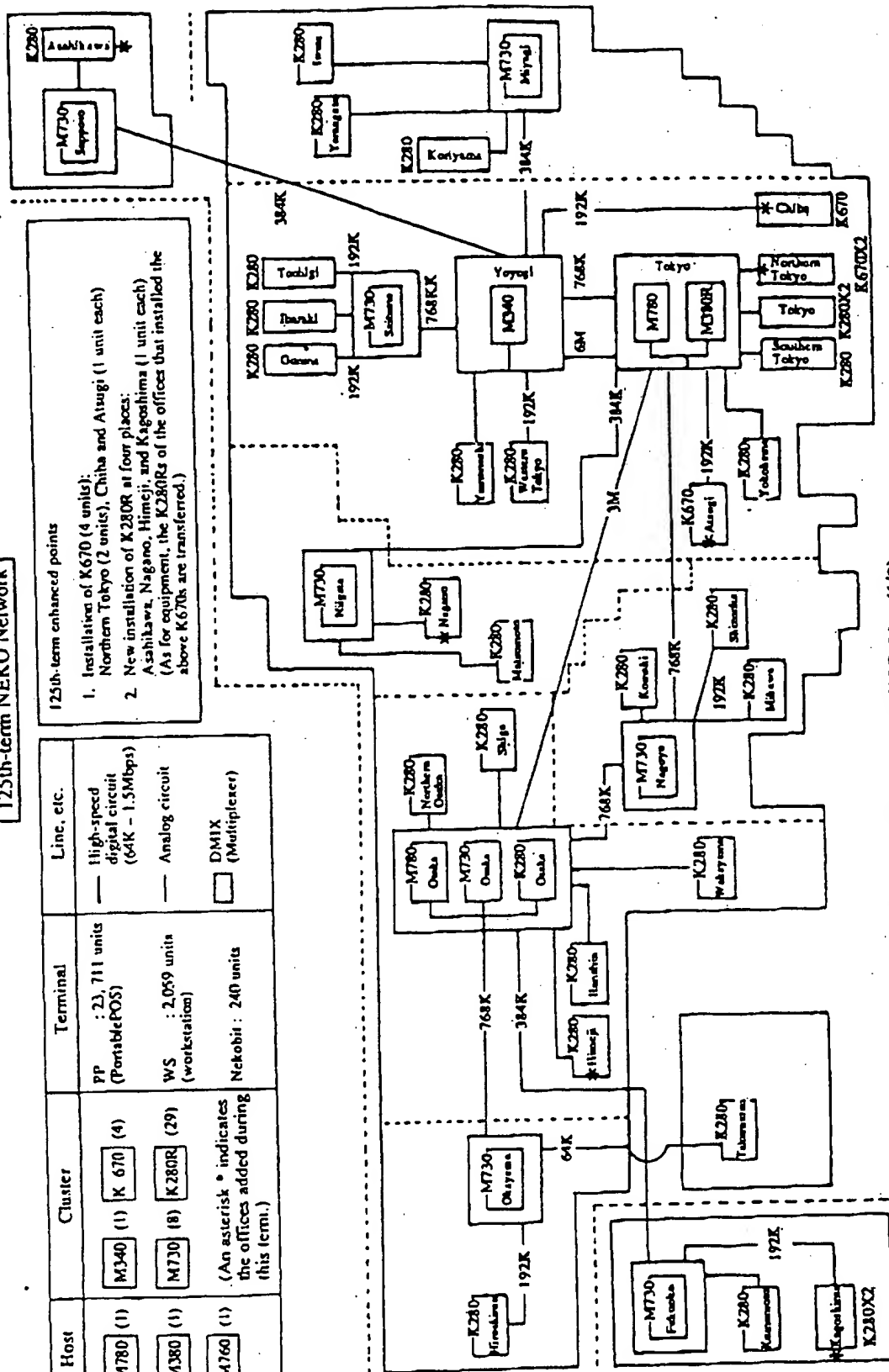


Figure 2. NEKO Net (1/2)



**Figure 2. NEKO Net (2/2)**

Yamato Systems Development Co. has undertaken not only the important mission of information processing for the Yamato Transport Co., it has also responded widely to the demands of other companies. The data on various goods that is stored in the databases is processed according to its use and purpose. The company computer is used for on-line operations from 8:00 a.m. to 10:30 p.m. and for batch processing (fare receivables and related billing work, wage calculations, flash reports of sales and various statistical operations) during the night shift. However, as for the "pursuit of goods," which is described later, batch update is performed at 30-minute intervals in the daytime also for real-time information. By taking the cable fire accident that occurred in Setagaya in 1984 as a lesson, a backup host machine is installed in Osaka.

#### 6. "Down" Information (Utilization of Information)

Although there are various information usages, two typical examples will be introduced here.

##### (1) Package Tracking System

What is happening to his or her package is the customer's greatest concern. Therefore, replying to this concern is the duty of the transporter. As described in the section on "up" information, package information is stored in the host computer, therefore, it can be seen immediately when and from where the package was sent and what is happening to it now, including the delivery process. Although it is not easy to search for a certain package from a great amount of data, the current computer can do it without difficulty.

##### (2) Checking Service Level (Control of the number of transport days)

What attracts people to the home delivery service is that delivery is made on the next day. Breaking a promise is an important issue. To check this, each delivered item is watched with the computer to see where it was sent from, where it was transported to and in how many days, regardless of whether or not a complaint was made. The percentage of undelivered items (the percentage of the number of items exceeding the specified number of days for transport) is calculated for the territories with bad delivery performance. The levels of performance are distinguished by color, such as red and yellow, as an index to improve the quality of transportation. This is outputted once a month for an ordinary month and outputted every day in December, which is a busy month.

##### 7. Radio System Using the Computer

There are two radio systems that connect vehicles and offices. One is a collection instruction system for collection vehicles and the other is an operations control information system for operations vehicles.

##### (1) Collection instruction system

The requests from customers for collection of items are made by telephone to an office. The reception clerk asks for the customer telephone number and inputs it into the reception machine, then data such as customer name, address, and telephone number is displayed on the screen. This data is automatically transmitted to the appropriate vehicle by wireless and is printed on a printer on the driver's seat. Consequently, collection activity can be

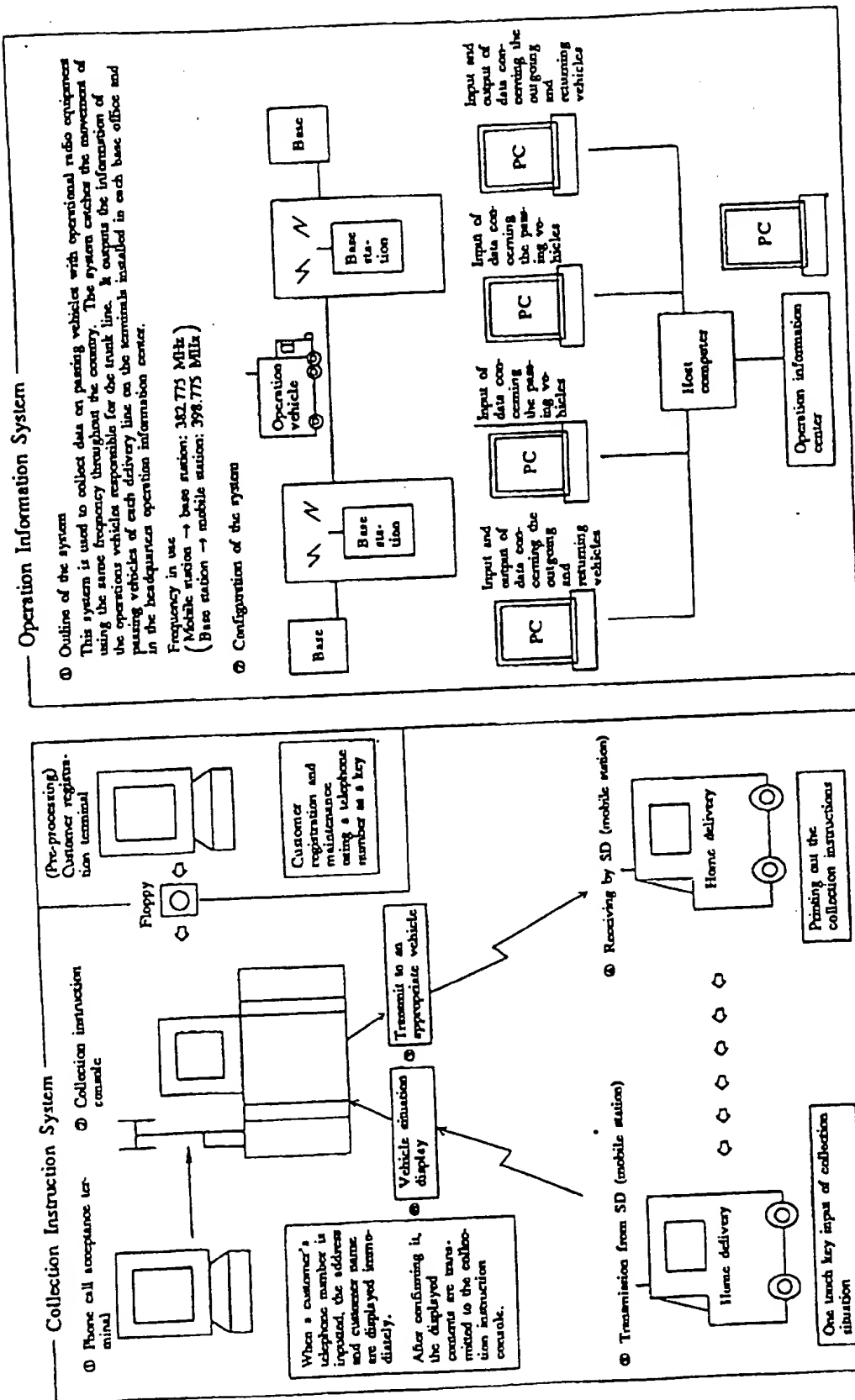


Figure 3. Radio System

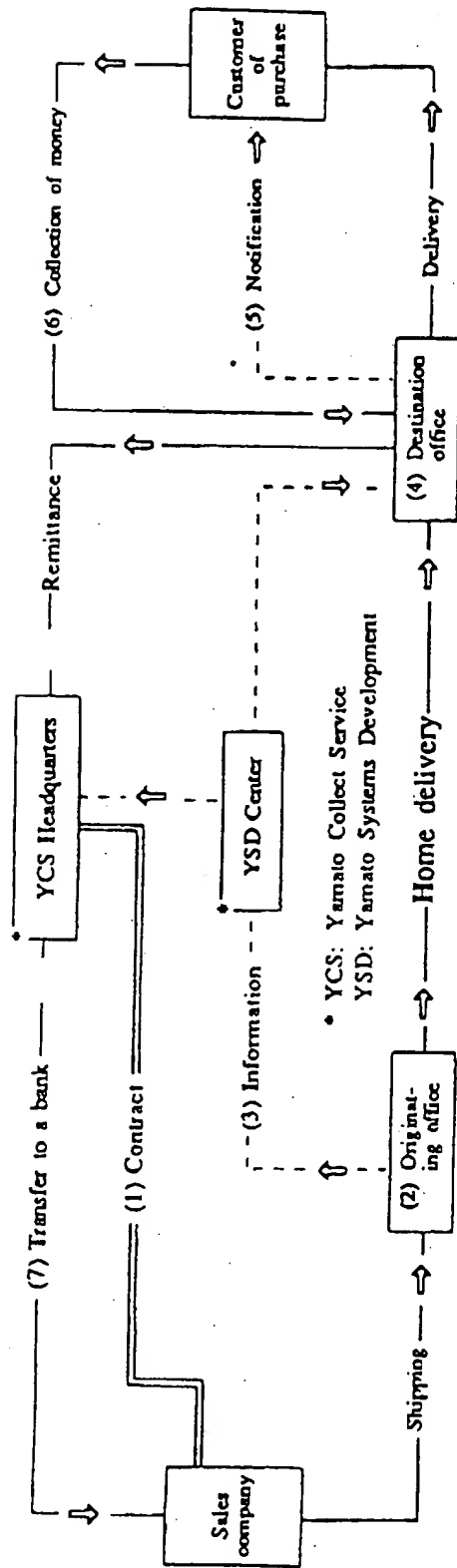


Figure 4. New Business by Affiliated Companies

performed immediately by this system, enabling just-in-time response to a customers' request.

## (2) Operations control information system

This is a tracking system for the operations vehicles that mainly travel for long distances at night. Check points (offices) are established along trunk expressways. A special radio-wave network is spread over these areas to automatically catch the operations vehicles of the company that pass through. This data is automatically reported to the host computer and the host computer collates the data with the schedule. If there is a delayed vehicle, the host computer reports this to the destination office so that the work setup can be preadjusted (See Figure 3).

## 8. New Businesses

The home delivery service network is involved in the creation of new businesses. Recently, direct marketing sales without a store, such as direct sales from areas of production and mail order sales are being developed, but they cannot be carried out without home delivery service as a consumer-direct-connection-type system. Therefore, we are creating subsidiaries that will provide assistance services related to customers sales and collection of money and information as a regular part of business, not as a side business to the home delivery service.

### (1) Yamato Collect Service Co., Ltd.

This is a 100% invested subsidiary of the Yamato Transport Co. This company is in charge of the cash-on-delivery business of

home delivery. The payment for goods can be collected quickly without errors by appending the price of the goods to the home delivery slip. Although it was performed by the major transport companies who called it "cash-on-delivery," as it was very troublesome, most of the companies tried to avoid it. However, with the spreading of the information network together with the improvement of home delivery service, it can now be performed securely, quickly and easily. This business is changing with good results.

### (2) Yamato Systems Development Co., Ltd.

This company is a 100% invested subsidiary of the Yamato Transport Co., and manages their NEKO system, mentioned above. Yamato Systems Development also provides computer services to other companies and these sales are greater than sales to Yamato Transport. This is the first VAN company in Japan and it supports various sales systems, named Joints, such as telemarketing, POS system, collection of payments and agent salesman control. The customers need only endeavor to use these systems for merchandise planning and advertisement. The packet switching network is overlapped on the NEKO Net with access points provided throughout the country. This system is sold as an assistant (connected with home delivery) VAN awaiting customers' use (See Figure 4).

### (3) Book Service Co., Ltd.

This is a joint-investment company with Kurita Bookstore for the sales of publications, the procurement of ordered publications and their delivery throughout the country. As a publications database is available,

orders made by postcard, telephone, facsimile machine and personal computer can be processed through their offices all over the country, and then the ordered publications are assembled and delivered. The collecting system of Yamato Collect Service is used for the collection of money. The cost for delivery of a standard-sized box is 300 yen throughout the country.

## 9. Conclusion

We are in a global age. Even if it is night where you live, somewhere on the earth it is day. Japan can keep an all-night vigil. Developing an uninterrupted global computer network will be even more desirable in the future.

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(54) Title: METHOD AND SYSTEM FOR CONDUCTING ELECTRONIC COMMERCE TRANSACTIONS

(57) Abstract

A system and method for conducting electronic payment transactions accepts and stores information describing an item sold by a merchant on a commerce server. The merchant also defines payment processing rules that define the payment methods accepted by the merchant. The merchant, in turn, is provided with a reference identifying the commerce server and the item. The merchant preferably publishes this reference at the merchant's web site on a web page offering the item for sale. A customer viewing the merchant's web site indicates a desire to purchase the item by selecting the reference. As a result, the customer is put in contact with the commerce server and is provided with information from the commerce server about the item and is given a list of payment options. The customer preferably selects a payment option and provides the commerce server with payment information, such as a credit card number. In response, the commerce server contacts a selected payment system and completes the electronic commerce transaction. The commerce server then notifies the customer and the merchant of the results of the electronic commerce transaction and delivers the item to the customer.



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## METHOD AND SYSTEM FOR CONDUCTING ELECTRONIC COMMERCE TRANSACTIONS

### CROSS-REFERENCE TO RELATED APPLICATION

5 This application is a continuation-in-part of U.S. Provisional Application No.  
60/054,121, filed July 29, 1997.

### BACKGROUND

#### FIELD OF THE INVENTION

10 This invention pertains in general to electronic commerce and in particular to a method  
and system for conducting electronic payment transactions via the Internet.

#### BACKGROUND OF THE INVENTION

Electronic commerce conducted over the Internet has become increasingly important  
over the last decade. Online merchants offer goods and services for sale or rent including  
15 physical objects such as compact disks, books, and clothing, and intellectual property such as  
streaming music and movies and electronic books. Physical items may be delivered to the  
customer via the mail or a variety of other shipping options. Intellectual property, in contrast,  
may be delivered to the customer by allowing a download via the file transfer protocol  
("FTP"), providing the customer with an access key, establishing a telnet session, or through  
20 some other form of electronic delivery.

Typically, these goods and services are displayed on the merchant's web site and a  
prospective customer views, selects, and purchases the goods using web browsing software  
such as NETSCAPE NAVIGATOR®. The customer usually pays for a product by establishing  
a secure connection with the merchant's web server and transmitting payment information,  
25 such as a credit card number, to the merchant. The merchant then uses back-end processing to  
verify the payment information and receive payment. For example, the merchant may use a  
secure telephone line or network link to contact the credit card issuer before accepting the  
customer's order. Eventually, the merchant and credit card issuer settle payment and the  
merchant delivers the product or service to the customer.

30 A difficulty with the above-described scenario is that each merchant must implement an  
inventory and payment database and a payment acceptance and verification system. For  
example, the merchant must establish and maintain a database tracking sales, delivery, and  
payment information and product inventories in order to support the electronic commerce  
system. There is significant cost and complexity in maintaining this database, including the  
35 difficulty of integrating it with legacy accounting and fulfillment systems and aggravated by

the scarcity of truly skilled personnel. In addition, the merchant must design web pages to securely accept the order and payment information and implement the functionality to verify the payment. These tasks can be extremely difficult if the merchant accepts payment using many different methods, such as credit cards and electronic fund transfers, or accepts payment in more than one currency. Moreover, having a large number of separate payment acceptance systems on the Internet provides a greater opportunity for fraud and abuse because the flaws of each system can be exploited.

Although Internet-based electronic commerce clearinghouses have been developed to handle transactions from many different parties, these clearinghouses do not provide a convenient interface to the merchant. In addition, the merchant must still establish the payment, verification, and database systems described above.

Accordingly, there is a need in the art for a method and system for conducting electronic commerce on the Internet which reduces the amount of work that must be performed by the online merchant. Preferably, the method and system will allow the merchant to easily and verifiably perform inventory, sales, and delivery tracking and transparently support different types of payments and currencies.

#### SUMMARY OF THE INVENTION

The above needs are met by a method and system for conducting electronic commerce transactions that allows a merchant to easily sell a mix of physical and intangible items and supports sales, inventory, and delivery tracking and a variety of payment systems by having the merchant establish an account on a commerce server. The commerce server provides the merchant with inventory, accounting, and order management systems. Furthermore, the commerce server allows merchants to conduct electronic commerce with other merchants and vendors.

The commerce server includes a web server providing web pages to the merchant. By using these web pages, the merchant establishes an account on the commerce server. Then, the merchant provides the commerce server with information about an item sold by the merchant, such as a plane ticket, clothing, a book, a software product, or playing time with an online game. The merchant also provides the commerce server with other attributes of the item from which the customer may select, for example, the quantity or duration of an item. In addition, the merchant supplies payment processing rules defining the payment options that are acceptable to the merchant, such as which currencies and payment systems are allowed and when or how often to bill the customer.

The commerce server preferably stores the information received from the merchant in an entry of a database. In one embodiment, the database entry categorizes the item as a hard good, soft good, or online good depending upon the delivery options available for the item. The commerce server, in addition, provides the merchant with a "payment button" including a universal resource locator ("URL") that points to the commerce server and includes information allowing the commerce server to identify the database entry with which the payment button is associated. The merchant preferably publishes the payment button on the merchant's web site.

The customer selects the payment button when the customer wishes to purchase the associated product. In response, the customer's computer is automatically directed to the web server managed by the commerce server and provided with the item information entered by the merchant. In addition, the customer is presented with the payment options allowed by the merchant's payment processing rules. Preferably, the customer then provides the web server with the payment information necessary to complete the transaction.

When the merchant's payment terms specify that payment is required, the commerce server preferably identifies the remote payment system selected by the customer and contacts it to complete the electronic commerce transaction. Preferably, a module within the commerce server converts calls generated by the commerce server into the format used by the selected payment system. Likewise, the module converts responses received from the payment system into the format used by the commerce server. Then, the commerce server notifies the customer and the merchant of the result of the electronic commerce transaction and, if appropriate, delivers the item using one of the delivery options specified in the database.

A method of conducting electronic commerce between a remote customer and a remote merchant in accordance with the present invention includes receiving information identifying an item to be purchased by the customer, receiving payment information specifying a payment method to be used by the customer to purchase the item, conducting a payment transaction with a remote payment system specified by the payment information, and providing the customer and the merchant with the result of the payment transaction.

Similarly, computer program instructions for conducting electronic commerce transactions in accordance with the present invention include instructions for storing item information received from the merchant, instructions for issuing the merchant a reference to the stored item information, instructions for receiving an electronic commerce transaction identifier from the customer containing the reference to the stored item information issued to

the merchant, instructions for accepting payment information from the customer, and instructions for conducting the electronic commerce transaction with a remote payment system.

#### BRIEF DESCRIPTION OF THE DRAWINGS

5       FIGURE 1 is a high-level block diagram of an electronic commerce system according to an embodiment of the present invention;

FIGURE 2 is a high-level block diagram illustrating functional components of a commerce server according to an embodiment of the present invention;

10       FIGURE 3 is a high-level block diagram of an entry in a database associated with the commerce server according to an embodiment of the present invention;

FIGURE 4 is a flow diagram illustrating the interactions between the customer, merchant, commerce server, and payment system when completing a payment transaction according to an embodiment of the present invention; and

15       FIGURE 5 illustrates an exemplary screen display of a web page seeking payment information from a customer; and

FIGURE 6 illustrates an exemplary screen display of an order confirmation web page.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As used herein, the "Internet" refers to the global network of interconnected computer  
20       systems and the "World Wide Web" ("WWW") refers to the global hypertext system using the Internet as its transport mechanism. A "universal resource locator" ("URL") is a reference to a piece of information or a software function on a computer connected to the Internet. A "web server" is a program that accepts requests for information framed according to the HyperText Transport Protocol ("HTTP"). "Web pages" are the information supplied by the web server in  
25       response to the requests. The Common Gateway Interface ("CGI") is the standard that describes how the web server accesses external programs, usually called "CGI programs" or "CGI scripts," called by a web page. Of course, the present invention is not limited to the Internet and may be used with any digital network supporting electronic commerce. In a non-Internet-based system, the terms defined above also include the non-Internet-based equivalents  
30       for communicating between the various entities described herein.

FIG. 1 is a high-level block diagram of an electronic commerce system 100 according to an embodiment of the present invention. Illustrated are a customer computer (sometimes referred to as "the customer") 110, a merchant web server (sometimes referred to as "the merchant") 112, and a commerce server ("CS") 114, all coupled to the Internet 116. In a

typical embodiment, the customer computer 110 is a personal computer having, among other things, a processor, memory, storage device, and monitor. The customer computer 110 is coupled to the Internet 116 via a network connection 118. The network connection may be, for example, a modem coupled to an analog telephone line, a digital subscriber line, a cable  
5 modem utilizing bandwidth on a cable television coaxial cable, a high speed digital line, or any other communications medium. Web browsing software, such as NETSCAPE NAVIGATOR®, preferably executes on the client computer and sends data from the client computer 110 to the merchant web server 112 via the network connection 118 and Internet  
10 116. In another embodiment, the customer computer 110 is a palm-top device or personal digital system communicating via radio waves with the Internet 116 or another electronic commerce system.

The merchant web server 112 is preferably similar to the customer computer 110 except that it has the processing power and communications 116 bandwidth to handle multiple simultaneous customer transactions. The merchant 112 sells items, such as merchandise,  
15 information, intellectual property, and/or services via a web site hosted on the merchant web server 112. The merchant's 112 web site may, for example, display a catalog of software available for purchase, allow the customer 110 to view flight schedules and purchase a plane ticket, or allow the customer 110 to play an online game, download a book or music, or access a database of information.

As used herein, the terms "customer" and "merchant" depend upon the specific transaction being conducted. In a chain of commerce transactions, the "customer" in a first transaction may be a "merchant" in a second transaction. For example, the customer 110 may buy components of a product from several different vendors or merchants 112 using the  
20 electronic commerce system described herein and then, in turn, sell the combined product via the customer's own web site and the CS 114.

The merchant's web site displays at least one "payment button." A payment button is a graphic button, a region of a larger graphic, a text string, or another form of URL link which the customer 110 may "press" by selecting it with a mouse, physical button, or other input device. In another embodiment, the payment button may be utilized on a non-Internet-based  
30 electronic commerce system. In such an embodiment, the payment button is considered to be "pressed" whenever a customer 110 expresses a desire to purchase an item. As described below, the payment button is pressed by the customer 110 when the customer 110 wishes to purchase and pay for an item displayed for sale on the merchant's web site. In a preferred embodiment, every type of item for sale on the merchant's web site has a separate payment

button. When a customer 110 wishes to purchase the product, the 110 customer presses the product's associated payment button. Then, the customer 110 is preferably presented with a menu allowing the customer 110 to specify attributes, such as quantity or duration, of the items that the customer 110 wishes to purchase.

5 In another embodiment, the merchant web site has only one payment button or has only one payment button for each class of items for sale. In this embodiment, the customer 110 is preferably presented with a menu of choices after pressing the payment button. For example, the menu of choices may ask the customer 110 to identify a specific product or an attribute of a product, like color, that the customer 110 wishes to purchase.

10 Every payment button has an associated URL that points to information in the CS 114. Preferably, a database key that uniquely identifies the merchant 112 and/or item for sale is encoded within the URL. When the customer 110 presses the payment button, the customer 110 is redirected to a web page provided by the CS 114 and specific to the merchant 112 and/or item.

15 In one embodiment, the CS 114 queries the customer for the quantity or duration of the item that the customer 110 wishes to purchase and payment information. The CS 114 receives the customer's responses and conducts the electronic commerce transaction according to payment processing rules and delivery options specified by the merchant 112. The CS 114 records the transaction in its database and notifies the customer and merchant whether the  
20 transaction was successful. Accordingly, the merchant 112 is relieved of the responsibility of conducting the electronic commerce transaction with the customer 110.

FIG. 2 is a high-level block diagram illustrating functional components of the CS 114 and also illustrating a remote payment system 222 and a remote merchant 223 according to a preferred embodiment of the present invention. The CS 114 is preferably similar to the  
25 customer 110 and merchant 112 computers, except that the CS 114 has enough processing power and Internet 116 bandwidth to support many simultaneous payment button transactions as described herein. The functionality of the CS 114 described herein may be performed by hardware or software modules within the CS 114. In one embodiment of the present invention, the functionality of the CS 114 is provided by software applications executing on INTEL x86-  
30 or SUN MICROSYSTEMS SPARC-compatible hardware under control of MICROSOFT WINDOWS NT or a derivative of the UNIX operating system, such as SOLARIS 2.5.1. In another embodiment of the present invention, the functionality of the CS 114 is provided by a distributed computing system as described below.

The remote payment system 222 is preferably a third-party payment gateway or system. The gateway or system is preferably connected to a financial transaction network, which, in turn, typically links to computers at banks and other financial institutions for approval and settlement of electronic commerce transactions. Typical gateways or systems may include CYBERCASH, e-CASH, MONDEX, or SET. While only one payment system 222 is illustrated in FIG. 2, the CS 114 may be in communication with many different remote payment systems 222, either through a secure link on the Internet 116 or a dedicated secure link. Each payment system has an applications programming interface ("API"). By using the API, the CS 114 communicates with the payment system 222 and performs secure and verifiable payment transactions.

The remote merchant 223 is preferably a merchant selling items via a web site as described above. The remote merchant 223 may have an account on the CS 114 or the merchant 223 may have an interface for selling items similar to the remote payment system 222. In general, the remote merchant 223 is included in FIG. 2 to illustrate that the customer's 110 electronic commerce transaction performed by the CS 114 may contact a remote payment system 222 and/or a remote merchant 223.

The CS 114 includes a payment button transaction engine 210 which is coupled to a database 212 and a web server 214. A firewall 216 preferably sits between the web server 216 and the transaction engine 210. While these functional components are illustrated in FIG. 2 as discrete entities, the CS 114 may be executed on a distributed computer system having a plurality of engines, databases, and web servers working together to perform the functions described herein. For example, one embodiment of the CS 114 uses multiple transaction engines 210 and web servers 214 and a single distributed database 212, thereby providing scalability to the CS 114. The number of web servers 214 and transaction engines 210 depends on the actual system load and the desire to achieve better performance through balancing the transaction load across the system.

The payment button transaction engine 210 includes a rules module 218 that controls the interactions and flows of information necessary to complete a payment transaction. In addition, the transaction engine 210 preferably includes a Payment Application Programming Interface ("PAPI") module 220 enabling communication between the CS 114 and the remote payment systems 222 and merchants 223. The PAPI module 220 abstracts the different APIs of each payment system 222 and merchant 223 into a single, higher level, PAPI that can interface with each of the payment systems 222 and merchants 223. The transaction engine 210 performs payment transactions with a payment system 222 or merchant 223 by making



calls to the PAPI. The PAPI abstraction module 220 translates these calls into the specific API of the payment system 222 or merchant 223 being used for that transaction. The PAPI abstraction module 220 also translates data received from the payment system 222 or merchant 223 into the format utilized by the transaction engine 210. Accordingly, the PAPI abstraction module 220 allows support for new payment systems 222 and merchants 223 to be added to the CS 114 by merely creating a new PAPI to payment system or merchant API mapping in the PAPI abstraction module 220.

The payment button store module ("PB store") 224, in combination with the web server 214, allows a merchant 112 to obtain a payment button. The web server 214 is preferably an industry standard web server such as the NETSCAPE ENTERPRISE SERVER or the APACHE web server. The web server 214 provides secure communication with the customer 110 and preferably uses industry standard technologies including HyperText Markup Language ("HTML"), and HTTP to deliver information to the customer 110. In addition, the web server preferably uses industry standard encryption techniques, including secure HTTP ("S-HTTP") and the secure sockets layer ("SSL"), to ensure that communications with the customer 110 are private. The firewall 216 allows only authorized communications between the web server 214 and the transaction engine 210 and ensures that a malicious user cannot access or corrupt the transaction engine 210.

The PB store 224 allows the merchant to purchase payment buttons and add product descriptions, merchant configurations, and other information to the database 212. In a preferred embodiment of the present invention, the merchant 112 accesses the PB store through a web site on the web server 214. The PB store module 224 captures the merchant 112 actions on the web server 214 and creates the appropriate entries in the database 212.

In one embodiment of the present invention, the PB store web site describes the payment button mechanism, the services offered by the payment button vendor, and the costs of the services. In addition, the web site preferably has a merchant registration form 226 for registering new merchants, a merchant renewal form 228 for renewing merchant registrations, and a payment button generation form 230 for issuing payment buttons to registered merchants. The forms preferably include CGI programs for performing the functionality described herein.

The merchant registration form 226 allows the merchant 112 to input information identifying the merchant 112 and includes a payment button with which the merchant 112 can pay a registration fee. After the fee payment is verified, the merchant 112 is preferably issued a login/password pair and an account with the CS 114 through which the merchant 112 can

WO 99/07121

access the payment button generation form and maintain the merchant's account. Similarly, the merchant renewal form 228 preferably includes a payment button with which the merchant 112 can pay a renewal fee.

The payment button generation form 230 allows the merchant 112 to enter item description data, such as item names and descriptions, prices, types, and delivery options, and payment processing rules, such as supported credit cards, payment systems, and currencies. In addition, the payment processing rules may rank the payment systems in order of preference, describe when payment is required (e.g., the merchant may require billing after 90 days), and/or describe the quantity or duration of an item available for a certain price. In one embodiment of the present invention, the merchant 112 enters the item description data and payment processing rules by uploading a file to web site having the information in a standardized format.

When entry of this data is completed, the payment button generation form 230 sends the data to the transaction engine 210, which stores the information in the database 212 at a location specified by a key. The transaction engine 210 passes the key back to the PB store web site, which provides the merchant with a payment button download page displaying the results of the payment button generation transaction. If the transaction was successful, the payment button download page includes the payment button issued to the merchant 112. The payment button has an associated URL that specifies the key. Accordingly, little or no engineering effort is required to maintain each merchant configuration on the CS 114.

In one embodiment of the present invention, there are multiple PB store web sites communicating with the database 212 through the transaction engine 210. When a payment button is created, the transaction engine 210 creates a field in the database 212 entry specifying the PB store that generated the payment button. Accordingly, payment buttons may be "branded" among different payment button vendors.

The database 212 is preferably a robust relational database. A preferred embodiment of the present invention uses the ORACLE 7 database to implement the functionality described herein. The database 212 stores item descriptions, payment processing rules, and other information necessary to complete a payment transaction on behalf of a merchant 112. This merchant information is preferably accessed in the database by using a key assigned to each merchant 112 and/or item for sale. The database 212 is also used as a repository of transaction information including authorization logs, payment status and completion records, and other information required by the merchant 112 and the CS 114.

FIG. 3 is a high-level block diagram of functional components within the database 212. Illustrated therein are a database entry 300 including a primary entry 310 linked to at least one of three types of item entries 312, 314, 316. The primary entry 310 is the entry identified by the key provided to the merchant 112. Accordingly, the primary entry 310 is typically  
5 accessed either when the merchant 112 provides the key while using the PB store web site or when the customer 110 uses the URL provided by a payment button to purchase the item identified in the database entry 310.

The primary entry 310 contains a field 318 storing the payment processing rules for the item as specified by the merchant 112 through the PB store. The primary entry 310 also  
10 contains a field 320 holding item type information as specified by the merchant 112. The item type information preferably describes the item attributes input by the merchant 112. In addition, the item type information field 320 preferably contains at least one link to another database entry 312, 314, 316 describing delivery options for the item.

The available delivery options for an item depend upon the type of item. FIG. 3  
15 illustrates three database entries 312, 314, 316 describing delivery options for hard, soft, and online items. However, an embodiment of the present invention may have many different types of items and corresponding delivery options. A hard item is typically a manufactured physical product such as clothing, a book, or a machine part. Accordingly, the entry 312 holding delivery options 322 may list various shipping methods and companies available for  
20 delivering the hard item to the customer 110.

A soft item, in contrast, is typically intangible intellectual property such as music, electronic books, or software. For example, the soft item may be a streaming music file that can be played by the customer 110. Accordingly, the entry 314 holding delivery options 324 may list a URL or electronic key that can be provided to the customer to effectuate the  
25 purchase. For example, the options 324 may provide instructions for initiating an FTP session to download the purchased soft item to the customer's 110 computer system.

An online item is typically access to an online service or other software executing remotely from the customer 110. For example, the online item may be access to an electronic database of information or an online game. Accordingly, the entry 316 holding delivery  
30 options 326 preferably includes instructions for allowing the customer 110 to access the online item. For example, the options 326 may provide instructions for initiating a telnet session with an electronic database for a limited duration of time.

FIG. 4 is a flow diagram illustrating the interactions between the customer 110, merchant 112, CS 114, database 212 and a payment system 222 when completing a payment

transaction according to a preferred embodiment of the present invention. In the flow diagram, time flows from the top of the diagram to the bottom and horizontal lines represent communications between the various entities. FIG. 4 illustrates only major interactions between the entities and does not represent every interaction. In addition, FIG. 4 illustrates a simple case of the present invention wherein the merchant's 112 payment processing rules specify that the payment transaction should be processed at the time the customer's 110 order is received.

Initially, the customer 110 is browsing the merchant's web site and decides to purchase an item by pressing 410 the associated payment button. In response to the press, the merchant's web server 112 redirects 412 the customer's browser to the location on the CS 114 specified by the URL associated with the payment button. The customer's browser fetches 414 the referenced page from the CS 114.

The CS 114 parses the URL received from the customer 110 for the database 212 key corresponding to the item that the customer 110 wishes to purchase. Using this key, the CS 114 accesses 416 the database 212 and dynamically generates a web page indicating the attributes and payment options available for the item as defined by the merchant 112. In addition, the CS 114 preferably determines the language utilized by the customer 110 and currencies supported by the merchant 112 and modifies the web page accordingly. This generated web page is sent 418 to the customer 110. FIG. 5 illustrates an exemplary screen display 500 of the web page seeking payment information from the customer 110.

The customer selects the desired item attributes and payment service, enters any necessary payment information, such as a credit card or account number, and transmits 420 these data to the CS 114. The CS 114 stores 422 the received data in the database 212 and contacts the selected payment system 222. As described above, the CS 114 preferably uses the PAPI module 220 to translate transaction calls made by the transaction engine 210 into the API of the selected payment system 222. The CS 114 preferably stores 426 records of all communications with the payment system 222, customer 110, and merchant 112 in the database 212. Therefore, the database 212 can be used to reconstruct transaction histories in order to provide error tracking and accounting services. If the payment system 222 rejects the transaction, the CS 114 publishes a web page to the customer indicating this result and presenting alternative payment methods, if any (this interaction is not shown in FIG. 4).

If the payment system 222 approves the transaction, the CS dynamically generates a web page containing payment status information and publishes 428 this information to the customer 110. This page preferably contains a receipt or confirmation number generated by

the CS 114. In a preferred embodiment of the present invention, the confirmation number is a unique number encoding transaction, session, and merchant identifications and a time and date stamp. This confirmation number is preferably a key to a database entry holding the transaction information and can be used later by the merchant 112 and customer 110 to confirm payment, to query the CS 114 for payment status information, and to use the CS 114 to query the payment system for account status information. The web page also preferably contains any other information required by the merchant 112 and a link to a confirmation page on the merchant's web site 112. FIG. 6 illustrates an exemplary screen display 600 of an order confirmation web page.

The CS 114 also notifies 428 the merchant 112 that payment was accepted and provides the same receipt or confirmation number as was provided to the customer 110. In one embodiment, this notification is performed via a secure electronic mail message. Accordingly, both the customer 110 and merchant 112 are notified that the purchase was made.

Finally, the customer 110 fetches 430 the confirmation web page on the merchant's web site. Preferably, this web page provides the customer 110 with additional information about the purchase or any other information which the merchant 112 desires to provide.

In summary, the present invention is a system, method, and computer program instructions for conducting electronic commerce transactions via the Internet or any electronic communication system. The merchant 112 opens an account on the CS 114 and supplies information about items sold by the merchant 112. The CS 114 stores this information in a database 212 entry and issues the merchant 112 a URL containing the key to database entry. The merchant 112 supplies this URL to customers wishing to purchase an item, causing a customer 110 to be connected to the CS 114. The CS 114 collects payment information from the customer 110, conducts the electronic commerce transaction with a remote payment system 222, and notifies the customer 110 and merchant 112 of the result.

## CLAIMS

I claim:

1. A computer system for supporting electronic commerce transactions between a customer and a remote merchant, the computer system comprising:

5 a database having an entry including merchant information identifying an item offered for sale by the remote merchant; and

a transaction engine in communication with the database and a remote payment system for performing an electronic commerce transaction, the transaction engine comprising:

10 a first module for receiving an electronic commerce transaction identifier from the customer, the electronic commerce transaction identifier specifying the entry in the database;

a second module for accepting payment information from the customer, the payment information identifying the remote payment system; and

15 a third module for performing the electronic commerce transaction with the remote payment system using the payment information received from the customer.

2. The computer system of claim 1, wherein the transaction engine further comprises:

20 a fourth module for notifying the remote merchant and the customer of a result of the electronic commerce transaction.

3. The computer system of claim 1, further comprising:

a web server in communication with the transaction engine for communicating with the remote merchant and customer; and

25 a firewall between the web server and the transaction engine for securing communications between the web server and the transaction engine.

4. The computer system of claim 3, wherein the transaction engine further comprises:

30 a fifth module for dynamically generating a web page from the entry in the database and providing the web page to the customer via the web server, the web page providing information about the item offered for sale by the remote

merchant and facilitating collection of the payment information from the customer.

5           5.     The computer system of claim 3, wherein the computer system further comprises:

          a sixth module for accepting the merchant information identifying the item offered for sale by the remote merchant via the web server, creating the database entry for holding the merchant information, and providing the remote merchant with a reference to the database entry.

10           6.     The computer system of claim 1, wherein the electronic commerce transaction identifier is a URL identifying the computer system and including a key to the entry in the database.

          7.     The computer system of claim 1, wherein the database further comprises:  
          an entry specifying payment processing rules defined by the remote merchant; and  
          an entry specifying delivery options for the item offered for sale by the remote  
15           merchant.

          8.     The computer system of claim 1, wherein there are a plurality of available remote payment systems and wherein the second module for accepting payment information from the customer accepts payment information identifying one of the available remote payment systems.

20           9.     The computer system of claim 1, wherein the transaction engine is executed by a plurality of distributed computer systems.

          10.    A method of conducting electronic commerce between a remote customer and a remote merchant, the method comprising the steps of:

          receiving information identifying an item to be purchased by the remote customer;  
25           receiving payment information specifying a payment method to be used by the remote customer to purchase the item;  
          conducting a payment transaction with a remote payment system specified by the payment information; and

providing the remote customer and the remote merchant with a result of the payment transaction.

11. The method of claim 10, further comprising the steps of:  
receiving information about the item to be purchased from the remote merchant;  
5 storing the information about the item to be purchased at a specified location; and  
providing the remote merchant with a reference to the specified location.

12. The method of claim 11, wherein the remote merchant provides the reference to the specified location to the remote customer responsive to the remote customer desiring to purchase the item.

10 13. The method of claim 10, further comprising the step of:  
providing the remote customer with a list of item attributes from which the customer can select.

14. The method of claim 10, wherein the step of receiving information identifying the item to be purchased by the remote customer comprises the steps of:  
15 receiving payment processing rules specifying payment options available for purchasing the item; and  
receiving delivery options for the item.

15. A computer-readable medium having computer instructions encoded thereon for conducting electronic commerce transactions between a remote merchant and a remote customer, the computer instructions comprising:  
20 instructions for storing item information received from the remote merchant;  
instructions for issuing the remote merchant a reference to the stored item information;  
instructions for receiving an electronic commerce transaction identifier from the  
25 remote customer containing the reference to the stored item information issued to the remote merchant;  
instructions for accepting payment information from the remote customer, the payment information identifying a remote payment system; and

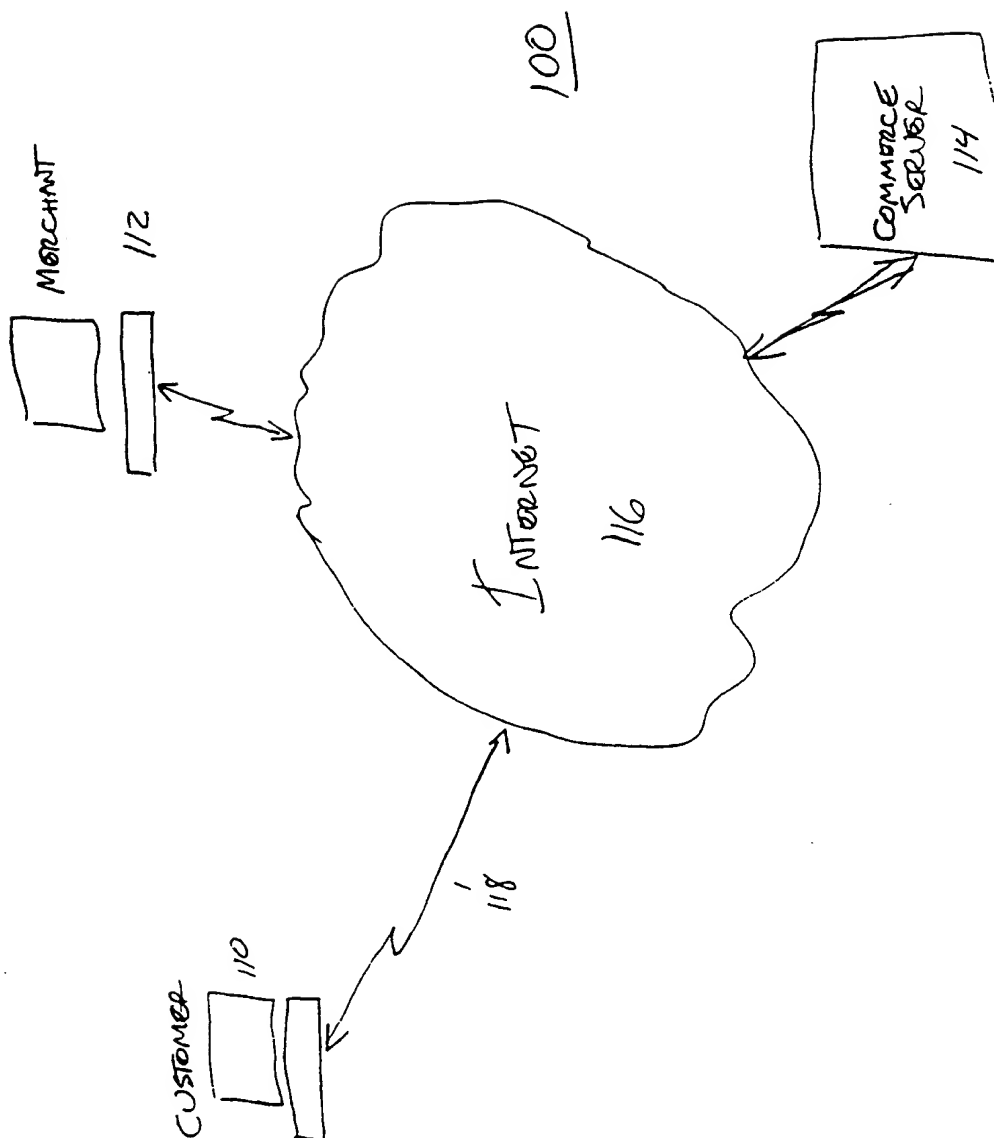


instructions for conducting the electronic commerce transaction with the remote payment system using the payment information received from the remote customer.

- 5      16.      The computer-readable medium of claim 15, wherein the instructions further comprise:  
instructions for notifying the remote merchant and the remote customer of a result of the electronic commerce transaction.

- 10      17.      The computer-readable medium of claim 15, wherein the instructions for storing item information received from the remote merchant comprise:  
instructions for receiving payment processing rules from the remote merchant specifying payment options for the electronic commerce transaction; and  
instructions for receiving delivery rules from the remote merchant specifying delivery options for the electronic commerce transaction.

FIG 1



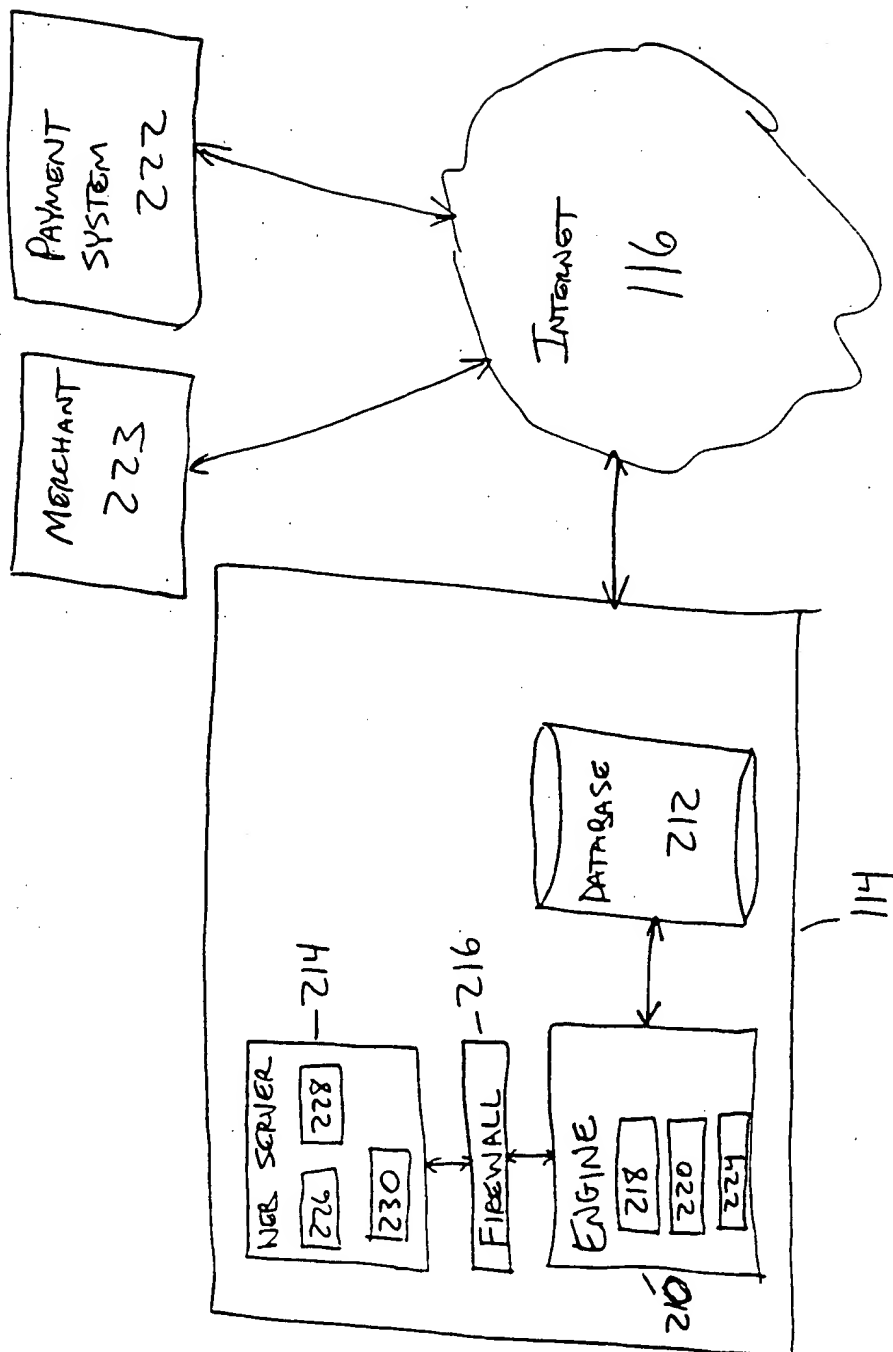


FIG 2

FIG 3

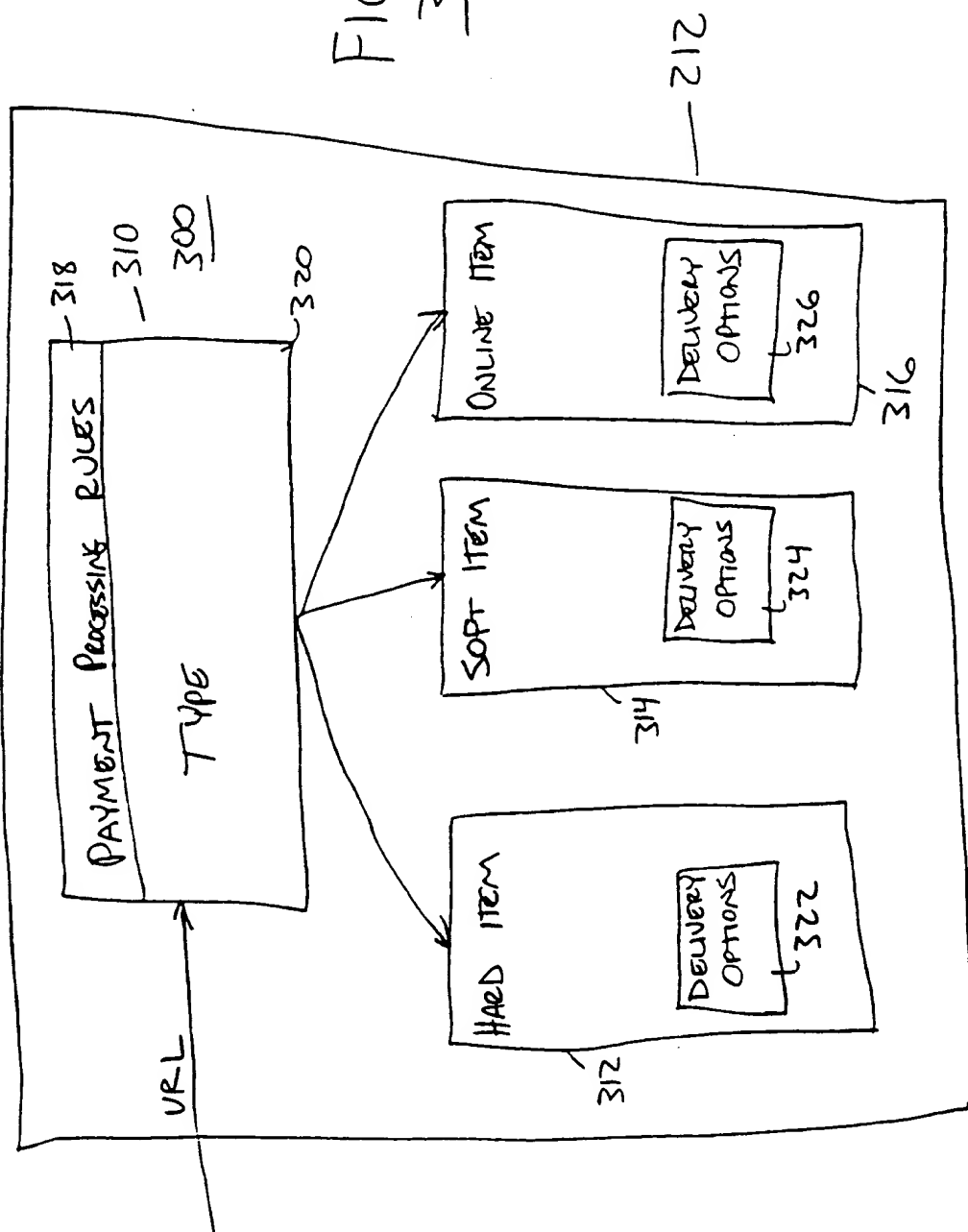
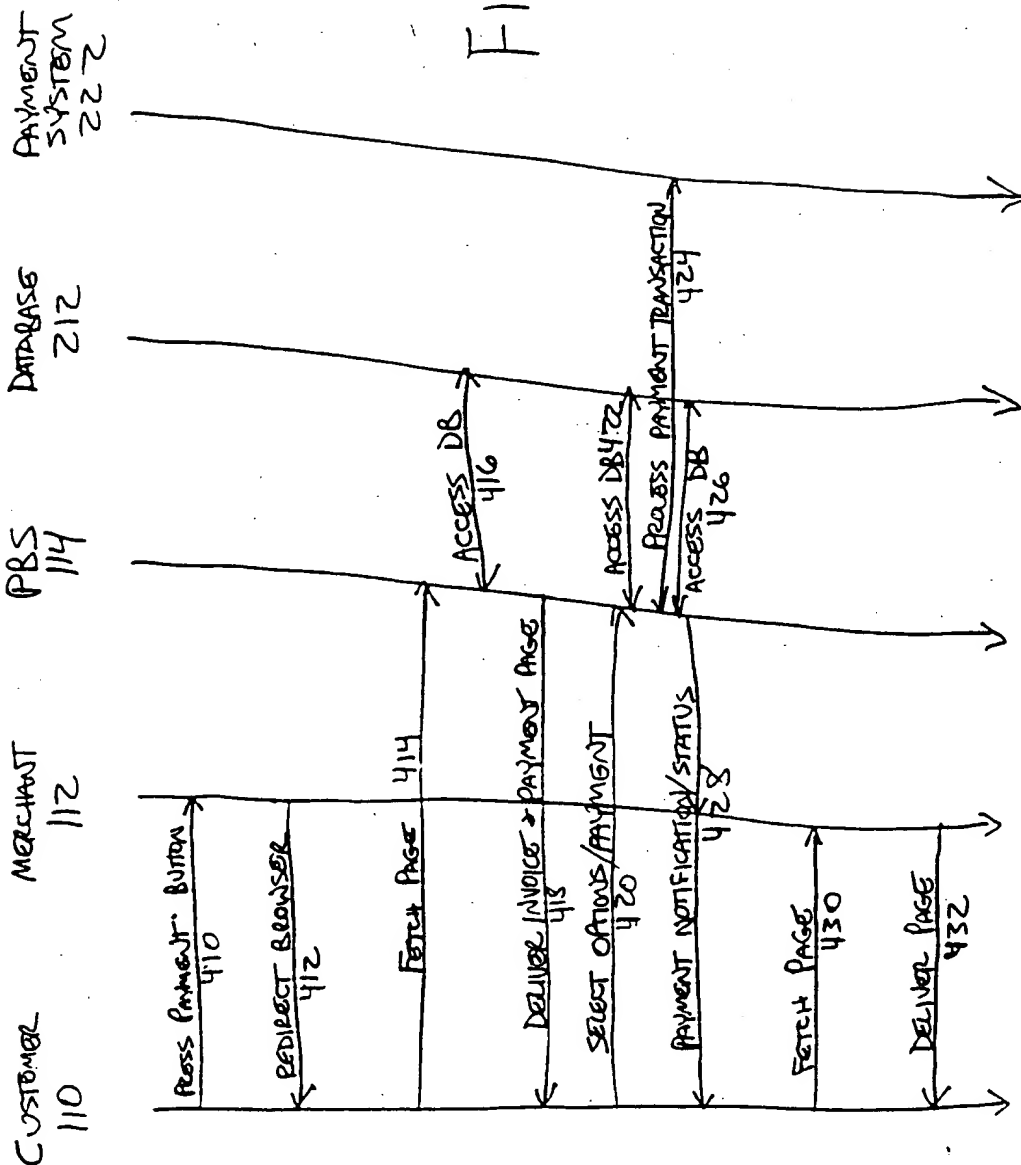


FIG 4



**netadvantage****Payment Details**

Please review this page and ensure it is correct,  
before completing your payment details.  
There is a 'Make Corrections' button at the bottom of the page if you need it.

**Products Ordered**

SKU	Qty	Item	Unit Price	Extended Price
214020	2	Sprocket (Medium)	\$8.99	\$17.98
Subtotal:				\$17.98
Shipping:				\$3.95
Tax:				\$1.72
Total:				\$23.65

	Billing Address	Shipping Address
First Name:	Joe	.
Last Name:	Blogg	.
Company:	Global Baking Company	.
Address 1:	2253 N Pennsylvania Rd #1	.
Address 2:	.	.
City:	San Jose	.
State/Province:	CA	.
Zip/Postal Code:	95025-5123	.
Country:	USA	.
Email:	joe.blogg@globalbake.com	.
Telephone:	1-650-237-2200	.

**Payment Information**

Payment Type: Mastercard

Name as it Appears on Card: \*

Card Number: \*

Expiration Date: \*    /    (MM/YY)

**Make Corrections** **Process Order**

FIG 5

500

**netadvantage** **Receipt****--Thank You for Your Order--**

Receipt Number: 158-8029-5

Global Sprokets Company Inc.  
2243 E Wilens Way, Boston, MA, 24248, USA.

Tel: +1 850 558 0377; FAX: +1 850 558 0388

Email: info@sprokets.com; Web: http://www.sprokets.com

Please print or save this page, and keep a copy in a safe place.  
 You may also return this page and request it during the next 30 days  
 you will be requested to enter your last name  
 (as listed below) to ensure privacy.

**Products Ordered**

Item Ref	Qty	Item	Price Each	Total Price
215029	2	Sprocket (Medium)	\$8.99	\$17.98
<b>Subtotal:</b>				<b>\$17.98</b>
<b>Shipping:</b>				<b>\$3.95</b>
<b>Tax:</b>				<b>\$1.72</b>
<b>Total:</b>				<b>\$23.65</b>

	Billing Address	Shipping Address
First Name:	Joe	.
Last Name:	Bliggs	.
Company:	Global Baking Company	.
Address 1:	2253 N Petersburg Road	.
Address 2:	.	.
City:	San Jose	.
State/Province:	CA	.
Zip/Postal Code:	96023-5123	.
Country:	USA	.

**Payment Information**

Payment Type: Mastercard  
 Your card has been charged: \$23.65

**Customer Information**

We aim to ship all items within 10 days.  
 Thank you for your order!

**Return to Site**

FIG 6

600 ↗

VERSION\*

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: METHOD AND SYSTEM FOR CONDUCTING ELECTRONIC COMMERCE TRANSACTIONS

(57) Abstract

A system and method for conducting electronic payment transactions accepts and stores information describing an item sold by a merchant on a commerce server. The merchant also defines payment processing rules that define the payment methods accepted by the merchant. The merchant, in turn, is provided with a reference identifying the commerce server and the item. The merchant preferably publishes this reference at the merchant's web site on a web page offering the item for sale. A customer viewing the merchant's web site indicates a desire to purchase the item by selecting the reference. As a result, the customer is put in contact with the commerce server and is provided with information from the commerce server about the item and is given a list of payment options. The customer preferably selects a payment option and provides the commerce server with payment information, such as a credit card number. In response, the commerce server contacts a selected payment system and completes the electronic commerce transaction. The commerce server then notifies the customer and the merchant of the results of the electronic commerce transaction and delivers the item to the customer.



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## METHOD AND SYSTEM FOR CONDUCTING ELECTRONIC COMMERCE TRANSACTIONS

### CROSS-REFERENCE TO RELATED APPLICATION

5 This application is a continuation-in-part of U.S. Provisional Application No.  
60/054,121, filed July 29, 1997.

### BACKGROUND

#### FIELD OF THE INVENTION

10 This invention pertains in general to electronic commerce and in particular to a method  
and system for conducting electronic payment transactions via the Internet.

#### BACKGROUND OF THE INVENTION

Electronic commerce conducted over the Internet has become increasingly important  
over the last decade. Online merchants offer goods and services for sale or rent including  
15 physical objects such as compact disks, books, and clothing, and intellectual property such as  
streaming music and movies and electronic books. Physical items may be delivered to the  
customer via the mail or a variety of other shipping options. Intellectual property, in contrast,  
may be delivered to the customer by allowing a download via the file transfer protocol  
("FTP"), providing the customer with an access key, establishing a telnet session, or through  
20 some other form of electronic delivery.

Typically, these goods and services are displayed on the merchant's web site and a  
prospective customer views, selects, and purchases the goods using web browsing software  
such as NETSCAPE NAVIGATOR®. The customer usually pays for a product by establishing  
a secure connection with the merchant's web server and transmitting payment information,  
25 such as a credit card number, to the merchant. The merchant then uses back-end processing to  
verify the payment information and receive payment. For example, the merchant may use a  
secure telephone line or network link to contact the credit card issuer before accepting the  
customer's order. Eventually, the merchant and credit card issuer settle payment and the  
merchant delivers the product or service to the customer.

30 A difficulty with the above-described scenario is that each merchant must implement an  
inventory and payment database and a payment acceptance and verification system. For  
example, the merchant must establish and maintain a database tracking sales, delivery, and  
payment information and product inventories in order to support the electronic commerce  
system. There is significant cost and complexity in maintaining this database, including the  
35 difficulty of integrating it with legacy accounting and fulfillment systems and aggravated by

the scarcity of truly skilled personnel. In addition, the merchant must design web pages to securely accept the order and payment information and implement the functionality to verify the payment. These tasks can be extremely difficult if the merchant accepts payment using many different methods, such as credit cards and electronic fund transfers, or accepts payment in more than one currency. Moreover, having a large number of separate payment acceptance systems on the Internet provides a greater opportunity for fraud and abuse because the flaws of each system can be exploited.

Although Internet-based electronic commerce clearinghouses have been developed to handle transactions from many different parties, these clearinghouses do not provide a convenient interface to the merchant. In addition, the merchant must still establish the payment, verification, and database systems described above.

Accordingly, there is a need in the art for a method and system for conducting electronic commerce on the Internet which reduces the amount of work that must be performed by the online merchant. Preferably, the method and system will allow the merchant to easily and verifiably perform inventory, sales, and delivery tracking and transparently support different types of payments and currencies.

#### SUMMARY OF THE INVENTION

The above needs are met by a method and system for conducting electronic commerce transactions that allows a merchant to easily sell a mix of physical and intangible items and supports sales, inventory, and delivery tracking and a variety of payment systems by having the merchant establish an account on a commerce server. The commerce server provides the merchant with inventory, accounting, and order management systems. Furthermore, the commerce server allows merchants to conduct electronic commerce with other merchants and vendors.

The commerce server includes a web server providing web pages to the merchant. By using these web pages, the merchant establishes an account on the commerce server. Then, the merchant provides the commerce server with information about an item sold by the merchant, such as a plane ticket, clothing, a book, a software product, or playing time with an online game. The merchant also provides the commerce server with other attributes of the item from which the customer may select, for example, the quantity or duration of an item. In addition, the merchant supplies payment processing rules defining the payment options that are acceptable to the merchant, such as which currencies and payment systems are allowed and when or how often to bill the customer.

The commerce server preferably stores the information received from the merchant in an entry of a database. In one embodiment, the database entry categorizes the item as a hard good, soft good, or online good depending upon the delivery options available for the item. The commerce server, in addition, provides the merchant with a "payment button" including a universal resource locator ("URL") that points to the commerce server and includes information allowing the commerce server to identify the database entry with which the payment button is associated. The merchant preferably publishes the payment button on the merchant's web site.

The customer selects the payment button when the customer wishes to purchase the associated product. In response, the customer's computer is automatically directed to the web server managed by the commerce server and provided with the item information entered by the merchant. In addition, the customer is presented with the payment options allowed by the merchant's payment processing rules. Preferably, the customer then provides the web server with the payment information necessary to complete the transaction.

When the merchant's payment terms specify that payment is required, the commerce server preferably identifies the remote payment system selected by the customer and contacts it to complete the electronic commerce transaction. Preferably, a module within the commerce server converts calls generated by the commerce server into the format used by the selected payment system. Likewise, the module converts responses received from the payment system into the format used by the commerce server. Then, the commerce server notifies the customer and the merchant of the result of the electronic commerce transaction and, if appropriate, delivers the item using one of the delivery options specified in the database.

A method of conducting electronic commerce between a remote customer and a remote merchant in accordance with the present invention includes receiving information identifying an item to be purchased by the customer, receiving payment information specifying a payment method to be used by the customer to purchase the item, conducting a payment transaction with a remote payment system specified by the payment information, and providing the customer and the merchant with the result of the payment transaction.

Similarly, computer program instructions for conducting electronic commerce transactions in accordance with the present invention include instructions for storing item information received from the merchant, instructions for issuing the merchant a reference to the stored item information, instructions for receiving an electronic commerce transaction identifier from the customer containing the reference to the stored item information issued to

the merchant, instructions for accepting payment information from the customer, and instructions for conducting the electronic commerce transaction with a remote payment system.

#### BRIEF DESCRIPTION OF THE DRAWINGS

5       FIGURE 1 is a high-level block diagram of an electronic commerce system according to an embodiment of the present invention;

FIGURE 2 is a high-level block diagram illustrating functional components of a commerce server according to an embodiment of the present invention;

10       FIGURE 3 is a high-level block diagram of an entry in a database associated with the commerce server according to an embodiment of the present invention;

FIGURE 4 is a flow diagram illustrating the interactions between the customer, merchant, commerce server, and payment system when completing a payment transaction according to an embodiment of the present invention; and

15       FIGURE 5 illustrates an exemplary screen display of a web page seeking payment information from a customer; and

FIGURE 6 illustrates an exemplary screen display of an order confirmation web page.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As used herein, the "Internet" refers to the global network of interconnected computer  
20       systems and the "World Wide Web" ("WWW") refers to the global hypertext system using the Internet as its transport mechanism. A "universal resource locator" ("URL") is a reference to a piece of information or a software function on a computer connected to the Internet. A "web server" is a program that accepts requests for information framed according to the HyperText Transport Protocol ("HTTP"). "Web pages" are the information supplied by the web server in  
25       response to the requests. The Common Gateway Interface ("CGI") is the standard that describes how the web server accesses external programs, usually called "CGI programs" or "CGI scripts," called by a web page. Of course, the present invention is not limited to the Internet and may be used with any digital network supporting electronic commerce. In a non-Internet-based system, the terms defined above also include the non-Internet-based equivalents  
30       for communicating between the various entities described herein.

FIG. 1 is a high-level block diagram of an electronic commerce system 100 according to an embodiment of the present invention. Illustrated are a customer computer (sometimes referred to as "the customer") 110, a merchant web server (sometimes referred to as "the merchant") 112, and a commerce server ("CS") 114, all coupled to the Internet 116. In a

typical embodiment, the customer computer 110 is a personal computer having, among other things, a processor, memory, storage device, and monitor. The customer computer 110 is coupled to the Internet 116 via a network connection 118. The network connection may be, for example, a modem coupled to an analog telephone line, a digital subscriber line, a cable modem utilizing bandwidth on a cable television coaxial cable, a high speed digital line, or any other communications medium. Web browsing software, such as NETSCAPE NAVIGATOR®, preferably executes on the client computer and sends data from the client computer 110 to the merchant web server 112 via the network connection 118 and Internet 116. In another embodiment, the customer computer 110 is a palm-top device or personal digital system communicating via radio waves with the Internet 116 or another electronic commerce system.

The merchant web server 112 is preferably similar to the customer computer 110 except that it has the processing power and communications bandwidth to handle multiple simultaneous customer transactions. The merchant 112 sells items, such as merchandise, information, intellectual property, and/or services via a web site hosted on the merchant web server 112. The merchant's 112 web site may, for example, display a catalog of software available for purchase, allow the customer 110 to view flight schedules and purchase a plane ticket, or allow the customer 110 to play an online game, download a book or music, or access a database of information.

As used herein, the terms "customer" and "merchant" depend upon the specific transaction being conducted. In a chain of commerce transactions, the "customer" in a first transaction may be a "merchant" in a second transaction. For example, the customer 110 may buy components of a product from several different vendors or merchants 112 using the electronic commerce system described herein and then, in turn, sell the combined product via the customer's own web site and the CS 114.

The merchant's web site displays at least one "payment button." A payment button is a graphic button, a region of a larger graphic, a text string, or another form of URL link which the customer 110 may "press" by selecting it with a mouse, physical button, or other input device. In another embodiment, the payment button may be utilized on a non-Internet-based electronic commerce system. In such an embodiment, the payment button is considered to be "pressed" whenever a customer 110 expresses a desire to purchase an item. As described below, the payment button is pressed by the customer 110 when the customer 110 wishes to purchase and pay for an item displayed for sale on the merchant's web site. In a preferred embodiment, every type of item for sale on the merchant's web site has a separate payment

button. When a customer 110 wishes to purchase the product, the 110 customer presses the product's associated payment button. Then, the customer 110 is preferably presented with a menu allowing the customer 110 to specify attributes, such as quantity or duration, of the items that the customer 110 wishes to purchase.

5 In another embodiment, the merchant web site has only one payment button or has only one payment button for each class of items for sale. In this embodiment, the customer 110 is preferably presented with a menu of choices after pressing the payment button. For example, the menu of choices may ask the customer 110 to identify a specific product or an attribute of a product, like color, that the customer 110 wishes to purchase.

10 Every payment button has an associated URL that points to information in the CS 114. Preferably, a database key that uniquely identifies the merchant 112 and/or item for sale is encoded within the URL. When the customer 110 presses the payment button, the customer 110 is redirected to a web page provided by the CS 114 and specific to the merchant 112 and/or item.

15 In one embodiment, the CS 114 queries the customer for the quantity or duration of the item that the customer 110 wishes to purchase and payment information. The CS 114 receives the customer's responses and conducts the electronic commerce transaction according to payment processing rules and delivery options specified by the merchant 112. The CS 114 records the transaction in its database and notifies the customer and merchant whether the  
20 transaction was successful. Accordingly, the merchant 112 is relieved of the responsibility of conducting the electronic commerce transaction with the customer 110.

FIG. 2 is a high-level block diagram illustrating functional components of the CS 114 and also illustrating a remote payment system 222 and a remote merchant 223 according to a preferred embodiment of the present invention. The CS 114 is preferably similar to the  
25 customer 110 and merchant 112 computers, except that the CS 114 has enough processing power and Internet 116 bandwidth to support many simultaneous payment button transactions as described herein. The functionality of the CS 114 described herein may be performed by hardware or software modules within the CS 114. In one embodiment of the present invention, the functionality of the CS 114 is provided by software applications executing on INTEL x86-  
30 or SUN MICROSYSTEMS SPARC-compatible hardware under control of MICROSOFT WINDOWS NT or a derivative of the UNIX operating system, such as SOLARIS 2.5.1. In another embodiment of the present invention, the functionality of the CS 114 is provided by a distributed computing system as described below.

The remote payment system 222 is preferably a third-party payment gateway or system. The gateway or system is preferably connected to a financial transaction network, which, in turn, typically links to computers at banks and other financial institutions for approval and settlement of electronic commerce transactions. Typical gateways or systems may include CYBERCASH, e-CASH, MONDEX, or SET. While only one payment system 222 is illustrated in FIG. 2, the CS 114 may be in communication with many different remote payment systems 222, either through a secure link on the Internet 116 or a dedicated secure link. Each payment system has an applications programming interface ("API"). By using the API, the CS 114 communicates with the payment system 222 and performs secure and verifiable payment transactions.

The remote merchant 223 is preferably a merchant selling items via a web site as described above. The remote merchant 223 may have an account on the CS 114 or the merchant 223 may have an interface for selling items similar to the remote payment system 222. In general, the remote merchant 223 is included in FIG. 2 to illustrate that the customer's 110 electronic commerce transaction performed by the CS 114 may contact a remote payment system 222 and/or a remote merchant 223.

The CS 114 includes a payment button transaction engine 210 which is coupled to a database 212 and a web server 214. A firewall 216 preferably sits between the web server 216 and the transaction engine 210. While these functional components are illustrated in FIG. 2 as discrete entities, the CS 114 may be executed on a distributed computer system having a plurality of engines, databases, and web servers working together to perform the functions described herein. For example, one embodiment of the CS 114 uses multiple transaction engines 210 and web servers 214 and a single distributed database 212, thereby providing scalability to the CS 114. The number of web servers 214 and transaction engines 210 depends on the actual system load and the desire to achieve better performance through balancing the transaction load across the system.

The payment button transaction engine 210 includes a rules module 218 that controls the interactions and flows of information necessary to complete a payment transaction. In addition, the transaction engine 210 preferably includes a Payment Application Programming Interface ("PAPI") module 220 enabling communication between the CS 114 and the remote payment systems 222 and merchants 223. The PAPI module 220 abstracts the different APIs of each payment system 222 and merchant 223 into a single, higher level, PAPI that can interface with each of the payment systems 222 and merchants 223. The transaction engine 210 performs payment transactions with a payment system 222 or merchant 223 by making



calls to the PAPI. The PAPI abstraction module 220 translates these calls into the specific API of the payment system 222 or merchant 223 being used for that transaction. The PAPI abstraction module 220 also translates data received from the payment system 222 or merchant 223 into the format utilized by the transaction engine 210. Accordingly, the PAPI abstraction module 220 allows support for new payment systems 222 and merchants 223 to be added to the CS 114 by merely creating a new PAPI to payment system or merchant API mapping in the PAPI abstraction module 220.

The payment button store module ("PB store") 224, in combination with the web server 214, allows a merchant 112 to obtain a payment button. The web server 214 is preferably an industry standard web server such as the NETSCAPE ENTERPRISE SERVER or the APACHE web server. The web server 214 provides secure communication with the customer 110 and preferably uses industry standard technologies including HyperText Markup Language ("HTML"), and HTTP to deliver information to the customer 110. In addition, the web server preferably uses industry standard encryption techniques, including secure HTTP ("S-HTTP") and the secure sockets layer ("SSL"), to ensure that communications with the customer 110 are private. The firewall 216 allows only authorized communications between the web server 214 and the transaction engine 210 and ensures that a malicious user cannot access or corrupt the transaction engine 210.

The PB store 224 allows the merchant to purchase payment buttons and add product descriptions, merchant configurations, and other information to the database 212. In a preferred embodiment of the present invention, the merchant 112 accesses the PB store through a web site on the web server 214. The PB store module 224 captures the merchant 112 actions on the web server 214 and creates the appropriate entries in the database 212.

In one embodiment of the present invention, the PB store web site describes the payment button mechanism, the services offered by the payment button vendor, and the costs of the services. In addition, the web site preferably has a merchant registration form 226 for registering new merchants, a merchant renewal form 228 for renewing merchant registrations, and a payment button generation form 230 for issuing payment buttons to registered merchants. The forms preferably include CGI programs for performing the functionality described herein.

The merchant registration form 226 allows the merchant 112 to input information identifying the merchant 112 and includes a payment button with which the merchant 112 can pay a registration fee. After the fee payment is verified, the merchant 112 is preferably issued a login/password pair and an account with the CS 114 through which the merchant 112 can

access the payment button generation form and maintain the merchant's account. Similarly, the merchant renewal form 228 preferably includes a payment button with which the merchant 112 can pay a renewal fee.

The payment button generation form 230 allows the merchant 112 to enter item description data, such as item names and descriptions, prices, types, and delivery options, and payment processing rules, such as supported credit cards, payment systems, and currencies. In addition, the payment processing rules may rank the payment systems in order of preference, describe when payment is required (e.g., the merchant may require billing after 90 days), and/or describe the quantity or duration of an item available for a certain price. In one embodiment of the present invention, the merchant 112 enters the item description data and payment processing rules by uploading a file to web site having the information in a standardized format.

When entry of this data is completed, the payment button generation form 230 sends the data to the transaction engine 210, which stores the information in the database 212 at a location specified by a key. The transaction engine 210 passes the key back to the PB store web site, which provides the merchant with a payment button download page displaying the results of the payment button generation transaction. If the transaction was successful, the payment button download page includes the payment button issued to the merchant 112. The payment button has an associated URL that specifies the key. Accordingly, little or no engineering effort is required to maintain each merchant configuration on the CS 114.

In one embodiment of the present invention, there are multiple PB store web sites communicating with the database 212 through the transaction engine 210. When a payment button is created, the transaction engine 210 creates a field in the database 212 entry specifying the PB store that generated the payment button. Accordingly, payment buttons may be "branded" among different payment button vendors.

The database 212 is preferably a robust relational database. A preferred embodiment of the present invention uses the ORACLE 7 database to implement the functionality described herein. The database 212 stores item descriptions, payment processing rules, and other information necessary to complete a payment transaction on behalf of a merchant 112. This merchant information is preferably accessed in the database by using a key assigned to each merchant 112 and/or item for sale. The database 212 is also used as a repository of transaction information including authorization logs, payment status and completion records, and other information required by the merchant 112 and the CS 114.

FIG. 3 is a high-level block diagram of functional components within the database 212. Illustrated therein are a database entry 300 including a primary entry 310 linked to at least one of three types of item entries 312, 314, 316. The primary entry 310 is the entry identified by the key provided to the merchant 112. Accordingly, the primary entry 310 is typically  
5 accessed either when the merchant 112 provides the key while using the PB store web site or when the customer 110 uses the URL provided by a payment button to purchase the item identified in the database entry 310.

The primary entry 310 contains a field 318 storing the payment processing rules for the item as specified by the merchant 112 through the PB store. The primary entry 310 also  
10 contains a field 320 holding item type information as specified by the merchant 112. The item type information preferably describes the item attributes input by the merchant 112. In addition, the item type information field 320 preferably contains at least one link to another database entry 312, 314, 316 describing delivery options for the item.

The available delivery options for an item depend upon the type of item. FIG. 3  
15 illustrates three database entries 312, 314, 316 describing delivery options for hard, soft, and online items. However, an embodiment of the present invention may have many different types of items and corresponding delivery options. A hard item is typically a manufactured physical product such as clothing, a book, or a machine part. Accordingly, the entry 312 holding delivery options 322 may list various shipping methods and companies available for  
20 delivering the hard item to the customer 110.

A soft item, in contrast, is typically intangible intellectual property such as music, electronic books, or software. For example, the soft item may be a streaming music file that can be played by the customer 110. Accordingly, the entry 314 holding delivery options 324 may list a URL or electronic key that can be provided to the customer to effectuate the  
25 purchase. For example, the options 324 may provide instructions for initiating an FTP session to download the purchased soft item to the customer's 110 computer system.

An online item is typically access to an online service or other software executing remotely from the customer 110. For example, the online item may be access to an electronic database of information or an online game. Accordingly, the entry 316 holding delivery  
30 options 326 preferably includes instructions for allowing the customer 110 to access the online item. For example, the options 326 may provide instructions for initiating a telnet session with an electronic database for a limited duration of time.

FIG. 4 is a flow diagram illustrating the interactions between the customer 110, merchant 112, CS 114, database 212 and a payment system 222 when completing a payment

transaction according to a preferred embodiment of the present invention. In the flow diagram, time flows from the top of the diagram to the bottom and horizontal lines represent communications between the various entities. FIG. 4 illustrates only major interactions between the entities and does not represent every interaction. In addition, FIG. 4 illustrates a simple case of the present invention wherein the merchant's 112 payment processing rules specify that the payment transaction should be processed at the time the customer's 110 order is received.

Initially, the customer 110 is browsing the merchant's web site and decides to purchase an item by pressing 410 the associated payment button. In response to the press, the merchant's web server 112 redirects 412 the customer's browser to the location on the CS 114 specified by the URL associated with the payment button. The customer's browser fetches 414 the referenced page from the CS 114.

The CS 114 parses the URL received from the customer 110 for the database 212 key corresponding to the item that the customer 110 wishes to purchase. Using this key, the CS 114 accesses 416 the database 212 and dynamically generates a web page indicating the attributes and payment options available for the item as defined by the merchant 112. In addition, the CS 114 preferably determines the language utilized by the customer 110 and currencies supported by the merchant 112 and modifies the web page accordingly. This generated web page is sent 418 to the customer 110. FIG. 5 illustrates an exemplary screen display 500 of the web page seeking payment information from the customer 110.

The customer selects the desired item attributes and payment service, enters any necessary payment information, such as a credit card or account number, and transmits 420 these data to the CS 114. The CS 114 stores 422 the received data in the database 212 and contacts the selected payment system 222. As described above, the CS 114 preferably uses the PAPI module 220 to translate transaction calls made by the transaction engine 210 into the API of the selected payment system 222. The CS 114 preferably stores 426 records of all communications with the payment system 222, customer 110, and merchant 112 in the database 212. Therefore, the database 212 can be used to reconstruct transaction histories in order to provide error tracking and accounting services. If the payment system 222 rejects the transaction, the CS 114 publishes a web page to the customer indicating this result and presenting alternative payment methods, if any (this interaction is not shown in FIG. 4).

If the payment system 222 approves the transaction, the CS dynamically generates a web page containing payment status information and publishes 428 this information to the customer 110. This page preferably contains a receipt or confirmation number generated by

the CS 114. In a preferred embodiment of the present invention, the confirmation number is a unique number encoding transaction, session, and merchant identifications and a time and date stamp. This confirmation number is preferably a key to a database entry holding the transaction information and can be used later by the merchant 112 and customer 110 to confirm payment, to query the CS 114 for payment status information, and to use the CS 114 to query the payment system for account status information. The web page also preferably contains any other information required by the merchant 112 and a link to a confirmation page on the merchant's web site 112. FIG. 6 illustrates an exemplary screen display 600 of an order confirmation web page.

The CS 114 also notifies 428 the merchant 112 that payment was accepted and provides the same receipt or confirmation number as was provided to the customer 110. In one embodiment, this notification is performed via a secure electronic mail message. Accordingly, both the customer 110 and merchant 112 are notified that the purchase was made.

Finally, the customer 110 fetches 430 the confirmation web page on the merchant's web site. Preferably, this web page provides the customer 110 with additional information about the purchase or any other information which the merchant 112 desires to provide.

In summary, the present invention is a system, method, and computer program instructions for conducting electronic commerce transactions via the Internet or any electronic communication system. The merchant 112 opens an account on the CS 114 and supplies information about items sold by the merchant 112. The CS 114 stores this information in a database 212 entry and issues the merchant 112 a URL containing the key to database entry. The merchant 112 supplies this URL to customers wishing to purchase an item, causing a customer 110 to be connected to the CS 114. The CS 114 collects payment information from the customer 110, conducts the electronic commerce transaction with a remote payment system 222, and notifies the customer 110 and merchant 112 of the result.

## CLAIMS

I claim:

1. A computer system for supporting electronic commerce transactions between a customer and a remote merchant, the computer system comprising:

5 a database having an entry including merchant information identifying an item offered for sale by the remote merchant; and

a transaction engine in communication with the database and a remote payment system for performing an electronic commerce transaction, the transaction engine comprising:

10 a first module for receiving an electronic commerce transaction identifier from the customer, the electronic commerce transaction identifier specifying the entry in the database;

a second module for accepting payment information from the customer, the payment information identifying the remote payment system; and

15 a third module for performing the electronic commerce transaction with the remote payment system using the payment information received from the customer.

2. The computer system of claim 1, wherein the transaction engine further comprises:

20 a fourth module for notifying the remote merchant and the customer of a result of the electronic commerce transaction.

3. The computer system of claim 1, further comprising:

a web server in communication with the transaction engine for communicating with the remote merchant and customer; and

25 a firewall between the web server and the transaction engine for securing communications between the web server and the transaction engine.

4. The computer system of claim 3, wherein the transaction engine further comprises:

30 a fifth module for dynamically generating a web page from the entry in the database and providing the web page to the customer via the web server, the web page providing information about the item offered for sale by the remote

merchant and facilitating collection of the payment information from the customer.

5. The computer system of claim 3, wherein the computer system further comprises:

- 5 a sixth module for accepting the merchant information identifying the item offered for sale by the remote merchant via the web server, creating the database entry for holding the merchant information, and providing the remote merchant with a reference to the database entry.

6. The computer system of claim 1, wherein the electronic commerce transaction identifier is a URL identifying the computer system and including a key to the entry in the database.

7. The computer system of claim 1, wherein the database further comprises:  
an entry specifying payment processing rules defined by the remote merchant; and  
an entry specifying delivery options for the item offered for sale by the remote merchant.

8. The computer system of claim 1, wherein there are a plurality of available remote payment systems and wherein the second module for accepting payment information from the customer accepts payment information identifying one of the available remote payment systems.

9. The computer system of claim 1, wherein the transaction engine is executed by a plurality of distributed computer systems.

10. A method of conducting electronic commerce between a remote customer and a remote merchant, the method comprising the steps of:

- receiving information identifying an item to be purchased by the remote customer;  
receiving payment information specifying a payment method to be used by the remote customer to purchase the item;  
conducting a payment transaction with a remote payment system specified by the payment information; and

providing the remote customer and the remote merchant with a result of the payment transaction.

11. The method of claim 10, further comprising the steps of:  
receiving information about the item to be purchased from the remote merchant;  
5 storing the information about the item to be purchased at a specified location; and  
providing the remote merchant with a reference to the specified location.

12. The method of claim 11, wherein the remote merchant provides the reference to the specified location to the remote customer responsive to the remote customer desiring to purchase the item.

10 13. The method of claim 10, further comprising the step of:  
providing the remote customer with a list of item attributes from which the customer can select.

14. The method of claim 10, wherein the step of receiving information identifying the item to be purchased by the remote customer comprises the steps of:  
15 receiving payment processing rules specifying payment options available for purchasing the item; and  
receiving delivery options for the item.

15. A computer-readable medium having computer instructions encoded thereon for conducting electronic commerce transactions between a remote merchant and a remote  
20 customer, the computer instructions comprising:

instructions for storing item information received from the remote merchant;  
instructions for issuing the remote merchant a reference to the stored item information;  
instructions for receiving an electronic commerce transaction identifier from the  
25 remote customer containing the reference to the stored item information issued to the remote merchant;  
instructions for accepting payment information from the remote customer, the payment information identifying a remote payment system; and

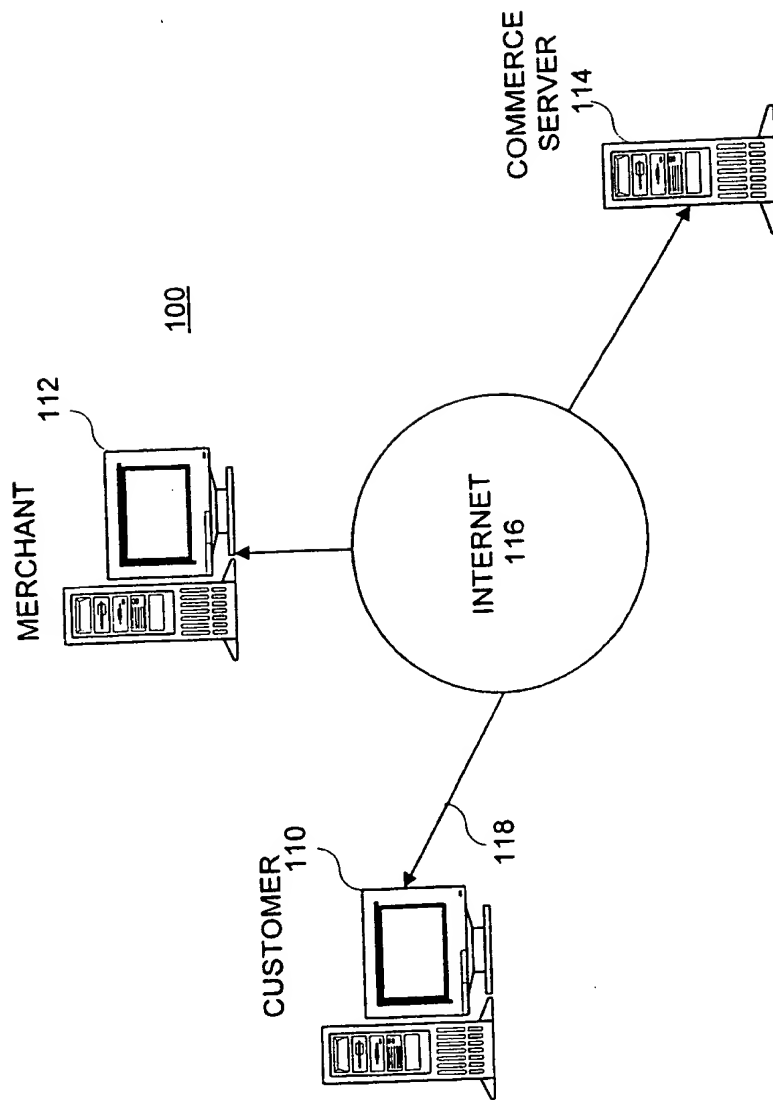


instructions for conducting the electronic commerce transaction with the remote payment system using the payment information received from the remote customer.

16. The computer-readable medium of claim 15, wherein the instructions further  
5 comprise:  
instructions for notifying the remote merchant and the remote customer of a result  
of the electronic commerce transaction.

17. The computer-readable medium of claim 15, wherein the instructions for storing  
item information received from the remote merchant comprise:  
10 instructions for receiving payment processing rules from the remote merchant  
specifying payment options for the electronic commerce transaction; and  
instructions for receiving delivery rules from the remote merchant specifying  
delivery options for the electronic commerce transaction.

FIG. 1



2/6

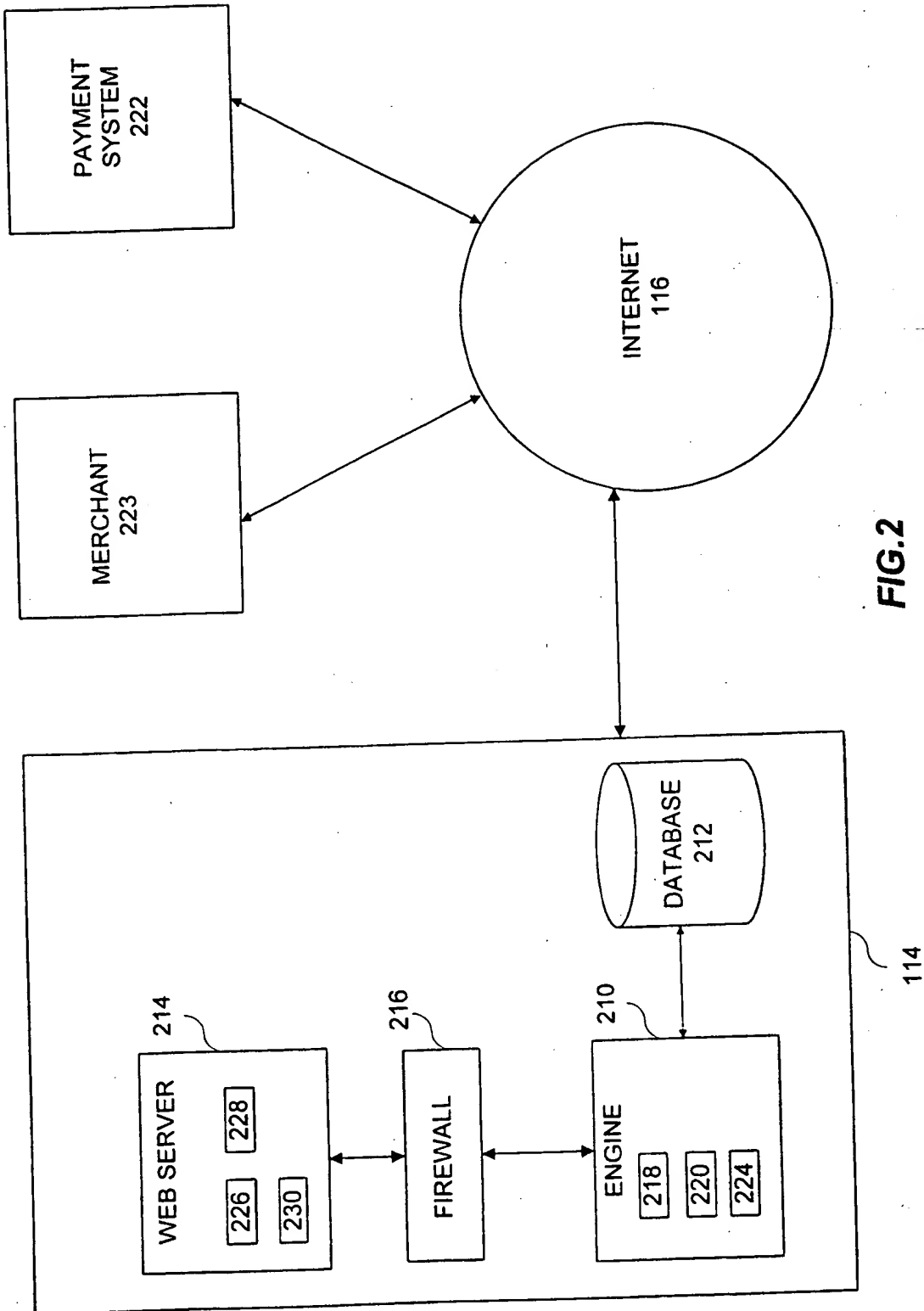
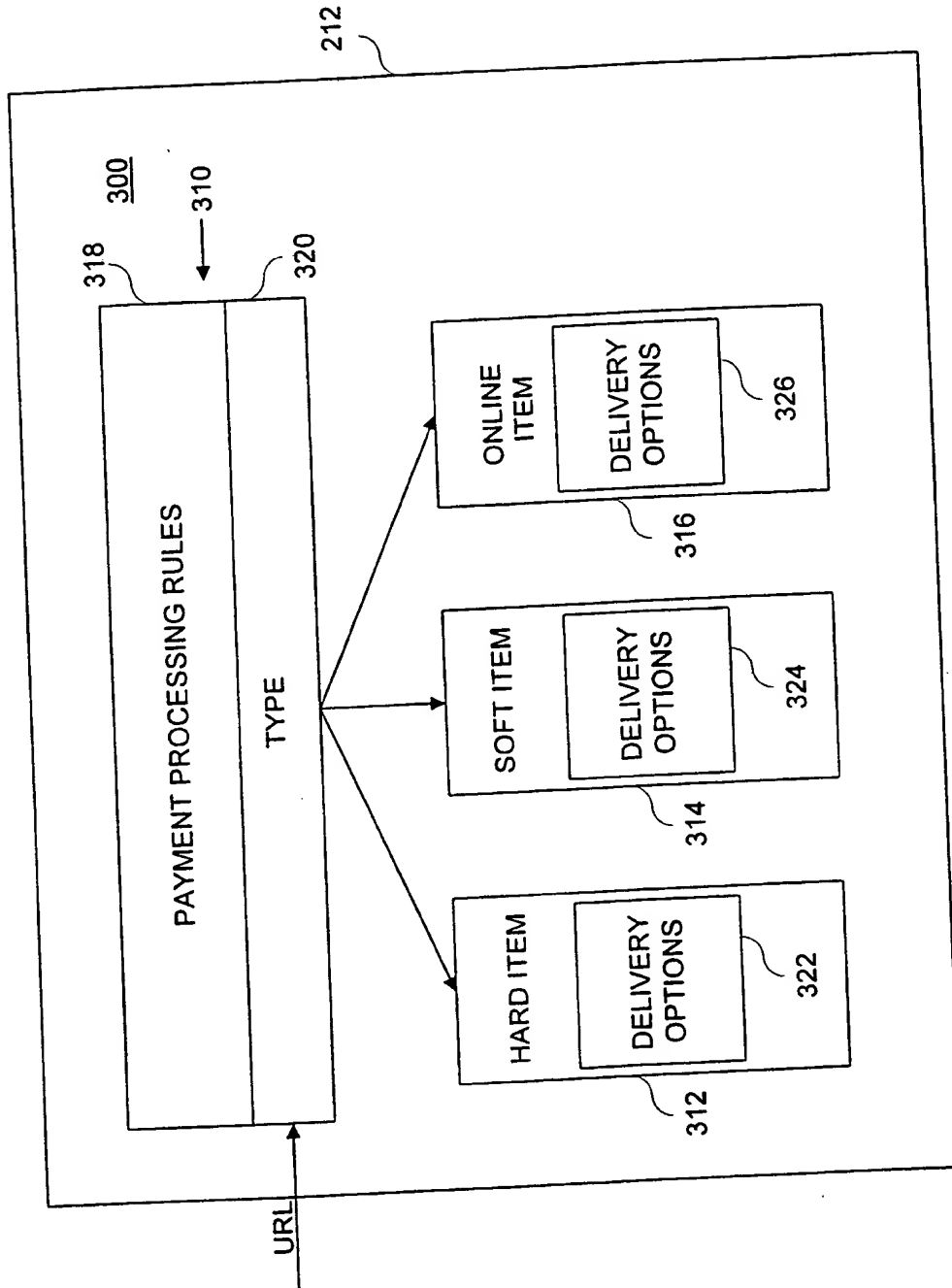
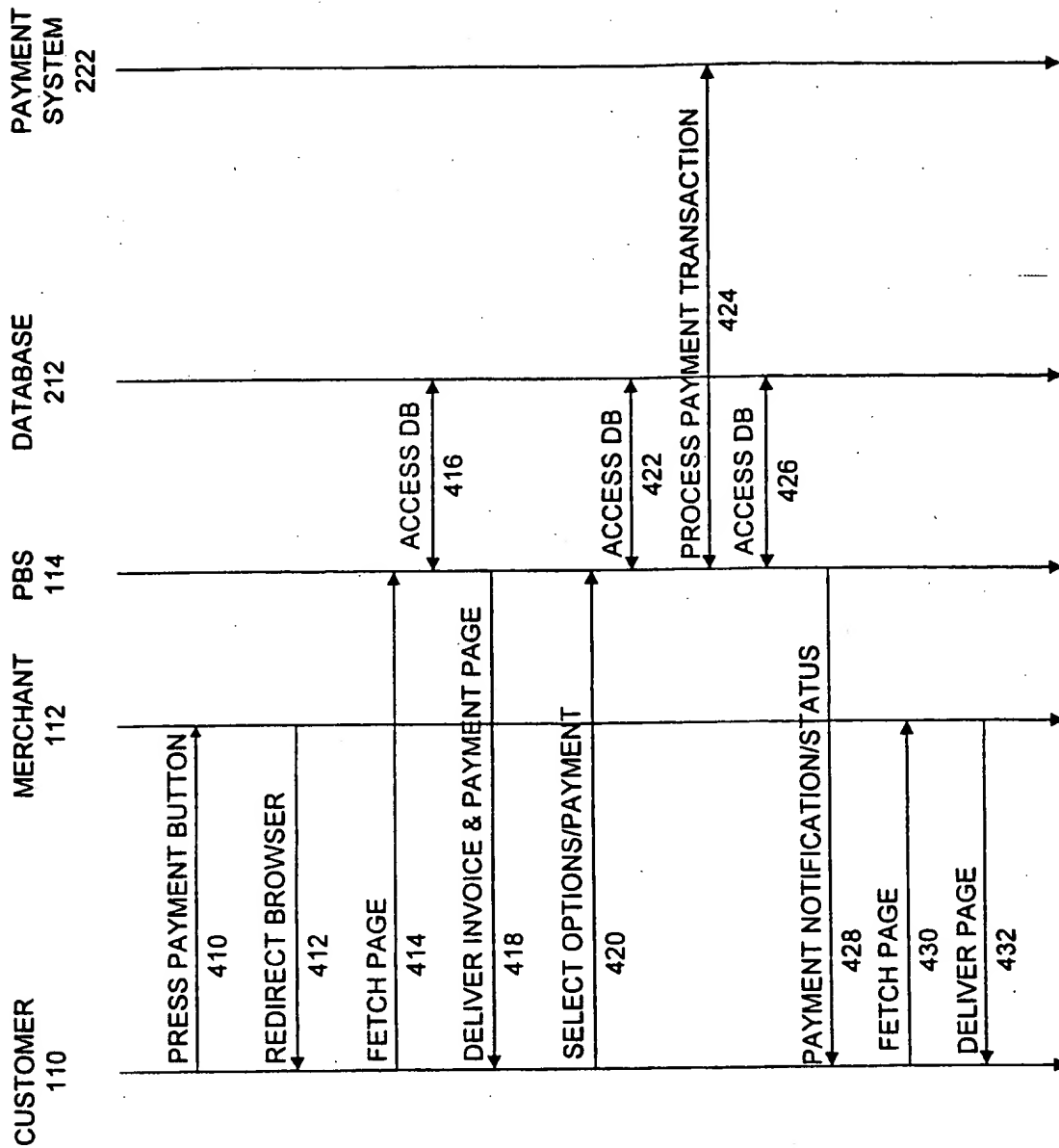


FIG.2

FIG. 3



4/6

**FIG. 4**

5/6

<b>netadvantage</b>	<b>PAYMENT DETAILS</b>																														
<p>PLEASE REVIEW THIS PAGE AND ENSURE IT IS CORRECT, BEFORE COMPLETING YOUR PAYMENT DETAILS.</p>																															
<b>PRODUCTS ORDERED</b>																															
<table style="width: 100%; border-collapse: collapse;"><thead><tr><th style="text-align: left;">SKU</th><th style="text-align: left;">QTY</th><th style="text-align: left;">ITEMS</th><th style="text-align: left;">UNIT PRICE</th><th style="text-align: left;">EXTENDED PRICE</th></tr></thead><tbody><tr><td>2121</td><td>2</td><td>SPROCKET</td><td>\$8.99</td><td>\$17.98</td></tr><tr><td colspan="3"></td><td>SUBTOTAL:</td><td>\$17.98</td></tr><tr><td colspan="3"></td><td>SHIPPING:</td><td>\$ 3.95</td></tr><tr><td colspan="3"></td><td>TAX:</td><td>\$ 1.72</td></tr><tr><td colspan="3"></td><td>TOTAL:</td><td>\$23.65</td></tr></tbody></table>		SKU	QTY	ITEMS	UNIT PRICE	EXTENDED PRICE	2121	2	SPROCKET	\$8.99	\$17.98				SUBTOTAL:	\$17.98				SHIPPING:	\$ 3.95				TAX:	\$ 1.72				TOTAL:	\$23.65
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			TOTAL:	\$23.65																											
<b>BILLING ADDRESS</b>	<b>SHIPPING ADDRESS</b>																														
<table style="width: 100%; border-collapse: collapse;"><tr><td style="width: 30%;">FIRST NAME:</td><td>JOE</td></tr><tr><td>LAST NAME:</td><td>BLOGGS</td></tr><tr><td>COMPANY:</td><td>GLOBAL BAKING COMPANY</td></tr><tr><td>ADDRESS 1:</td><td>2252 N. PETERS RD.</td></tr><tr><td>ADDRESS2:</td><td></td></tr><tr><td>CITY:</td><td>SAN JOSE</td></tr><tr><td>STATE:</td><td>CA</td></tr><tr><td>ZIP:</td><td>96025-5123</td></tr></table>		FIRST NAME:	JOE	LAST NAME:	BLOGGS	COMPANY:	GLOBAL BAKING COMPANY	ADDRESS 1:	2252 N. PETERS RD.	ADDRESS2:		CITY:	SAN JOSE	STATE:	CA	ZIP:	96025-5123														
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NUMBER *	<input style="width: 100%;" type="text"/>																														
EXPIRATION DATE *	<input style="width: 15%;" type="text"/> / <input style="width: 15%;" type="text"/>																														
<b>MAKE CORRECTIONS</b>	<b>PROCESS ORDER</b>																														

FIG.5

500

6/6

<b>netadvantage</b>	<b>RECEIPT</b>			
-- THANK YOU FOR YOUR ORDER -- RECEIPT NUMBER: 1587-8029-5				
GLOBAL SPROKETS COMPANY INC. 2243 E. WISTENA WAY, BOSTON, MA 24248, USA EMAIL: INFO@SPROKETS.COM. WEB: HTTP://WWW.SPROKETS.COM				
<b>PRODUCTS ORDERED</b>				
SKU	QTY	ITEMS	UNIT PRICE	TOTAL PRICE
2121	2	SPROCKET	\$8.99	\$17.98
			SUBTOTAL:	\$17.98
			SHIPPING:	\$ 3.95
			TAX:	\$ 1.72
			TOTAL:	\$23.65
<b>BILLING ADDRESS</b>			<b>SHIPPING ADDRESS</b>	
FIRST NAME:		JOE		
LAST NAME:		BLOGGS		
COMPANY:		GLOBAL BAKING COMPANY		
ADDRESS 1:		2252 N. PETERS RD.		
ADDRESS2:				
CITY:		SAN JOSE		
STATE:		CA		
ZIP:		96025-5123		
<b>PAYMENT INFORMATION</b>				
PAYMENT TYPE:		MASTERCARD		
YOUR CARD HAS BEEN CHARGED: \$23.65				
<b>CUSTOMER INFORMATION</b>				
WE AIM TO SHIP ITEMS WITHIN 10 DAYS THANK YOU FOR YOUR ORDER!				
<b>RETURN TO SITE</b>				

FIG.6

600

CORRECTED  
VERSION\*



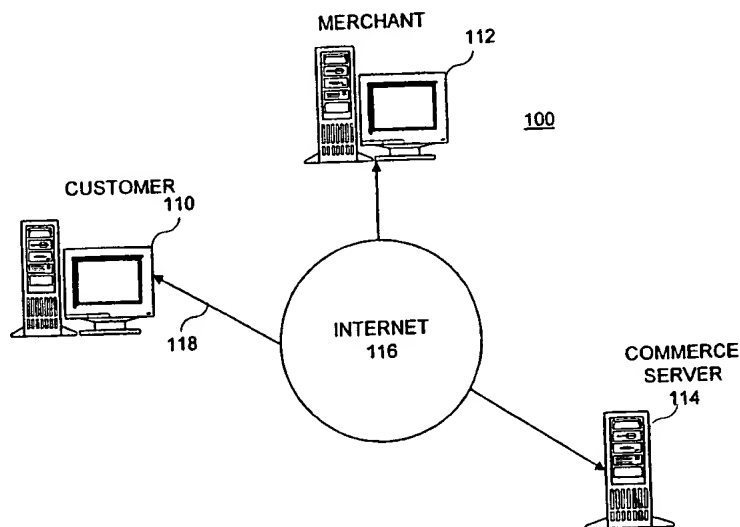
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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>G06F 17/60</b>		<b>A3</b>	(11) International Publication Number: <b>WO 99/07121</b> (43) International Publication Date: 11 February 1999 (11.02.99)
(21) International Application Number: PCT/US98/15884 (22) International Filing Date: 28 July 1998 (28.07.98) (30) Priority Data: 60/054,121 29 July 1997 (29.07.97) US (71) Applicant: NETADVANTAGE CORPORATION [US/US]; Suite B, 1674 North Shoreline Boulevard, Mountain View, CA 94043-1316 (US). (72) Inventor: FETIK, Richard, J.; #4 Comstock Queen Court, Mountain View, CA 94043 (US). (74) Agents: HOFFMAN, Brian, M. et al.; Fenwick & West LLP, Two Palo Alto Square, Palo Alto, CA 94306 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims</i> <i>and to be republished in the event of the receipt of amendments.</i>  (88) Date of publication of the international search report: 8 July 1999 (08.07.99)	

(54) Title: METHOD AND SYSTEM FOR CONDUCTING ELECTRONIC COMMERCE TRANSACTIONS



(57) Abstract

A system and method for conducting electronic payment transactions accepts and stores information describing an item sold by a merchant on a commerce server. The merchant also defines payment processing rules that define the payment methods accepted by the merchant. The merchant, in turn, is provided with a reference identifying the commerce server and the item. The merchant preferably publishes this reference at the merchant's web site on a web page offering the item for sale. A customer viewing the merchant's web site indicates a desire to purchase the item by selecting the reference. As a result, the customer is put in contact with the commerce server and is provided with information from the commerce server about the item and is given a list of payment options. The customer preferably selects a payment option and provides the commerce server with payment information, such as a credit card number. In response, the commerce server contacts a selected payment system and completes the electronic commerce transaction. The commerce server then notifies the customer and the merchant of the results of the electronic commerce transaction and delivers the item to the customer.



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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/15884

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 G06F G07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	EP 0 855 687 A (AT&T CORP.) 29 July 1998 see the whole document	1-17
X	SIRBU ET AL: "NetBill: An Internet Commerce System Optimized for Network-Delivered Services" IEEE PERSONAL COMMUNICATIONS, vol. 1, no. 4, August 1995, pages 34-39, XP000517588	1-3, 10-12
A	New York, NY, US see the whole document	4-9, 13-17

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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A	<p>CONNOLLY: "Technical forum - IBM's electronic commerce solution: CommercePOINT"</p> <p>IBM SYSTEMS JOURNAL, vol. 36, no. 1, 1 January 1997, pages 162-166, XP002073436</p> <p>see the whole document</p>	1-17
P, A	<p>BALASUBRAMANIAN ET AL: "Toward object-web based service provider infrastructure for e-commerce transactions"</p> <p>XVI WORLD TELECOM CONGRESS PROCEEDINGS, 21 September 1997, pages 105-112, XP000704461</p> <p>see section 7.2</p> <p>see figure 8</p>	1-17
A	<p>EP 0 784 279 A (SUN MICROSYSTEMS INC.)</p> <p>16 July 1997</p> <p>see the whole document</p>	1, 10, 15

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 98/15884

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 855687	A	29-07-1998	CA 2222229 A JP 10207945 A	15-07-1998 07-08-1998
EP 784279	A	16-07-1997	US 5745681 A DE 69600368 D DE 69600368 T EP 0807891 A JP 9296819 A	28-04-1998 23-07-1998 25-02-1999 19-11-1997 18-11-1997

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